CLINICAL MEETING • ST. LOUIS, MO. • DECEMBER 1-4, 1953

This Issue Exceeds 150,000 Copies

THE JOURNAL

OF THE

American Medical Association

Volume 153, No. 5 — Published Weekly at 535 North Dearborn Street, Chicago 10, Illinois. Subscription, $15. Single Copy, 45 cents — October 3, 1953

ORIGINAL ARTICLES

MILITARY MEDICINE 457
R. A. Kern, M.D., Philadelphia

CEREBRAL EDEMA AND ITS RELATION TO BARBITURIC ACID POISONING 459
L. H. Mousel, M.D., Seattle

SULFOBROMOPHTHALEIN CLEARANCE TEST 462
R. D. Goodman, M.D., and G. R. Kingsley, M.S., Beverly Hills, Calif.

NATAL DAY DEATHS 466
H. N. Bundesen, M.D., Sc.D., Chicago

ROLE OF THE PEDIATRICIAN IN PREVENTION OF NEEDLESS NEONATAL DEATHS 473
S. H. Clifford, M.D., Brookline, Mass.

HOSPITALS AND PREVENTION OF NEONATAL MORTALITY 476
C. U. Letourneau, M.D., Chicago

CLINICAL NOTES

CORRECTIVE BRACE FOR THE UPPER EXTREMITY IN HEMIPLEGIA 479
L. N. Rudin, M.D.; D. J. Cronin, and J. S. Croucher, Fort Howard (Baltimore), Md.

NEW ANTIEMETIC DRUG 480
D. G. Friend, M.D., and J. F. Cummins, M.D., Boston

SPECIAL REPORTS

MEDICINE, WARFARE, AND HISTORY 482
J. F. Fulton, M.D., New Haven, Conn.

RADIATION PROTECTION COMES OF AGE 488
R. H. Chamberlain, M.D., Philadelphia

Council on Physical Medicine and Rehabilitation

THE TRANSISTOR HEARING AID 491

EDITORIALS

The World Medical Association and Medical Education 492

Behavior Changes in Children Subjected to Tonsillectomy 493

ORGANIZATION SECTION

St. Louis Clinical Meeting, Dec. 1-4 494

"March of Medicine" Series 494

Report on Grievance Committees 494

PR Conference in St. Louis 494

REGULAR DEPARTMENTS

Medical News 495
Meetings 499
Examinations and Licensure 501
Deaths 502
Government Services:
Navy 504
Department of Defense 504
Veterans Administration 504
Foreign Letters:
Italy 505
London 506
Mexico 507
Sweden 507
The Leisure Corner:
The "Sunday" Painter 508
Correspondence:
Carbon Dioxide Inhalation. Beryllium Poisoning Registry. Shipment of Periodicals and Books for Korea 509
Council on Medical Service:
County Medical Society Grievance Committees 510
Medicolegal Abstracts 511
Medical Literature Abstracts 512
Book Reviews 526
Queries and Minor Notes:
Transfusions in Infants. Poliomyelitis. Ascorbic Acid. Gilles De La Tourette's Disease. Care of Infant of a Diabetic Mother. Recurrences of Rheumatic Fever. 527

WASHINGTON NEWS

Commission on Intergovernmental Relations. Poliomyelitis. Social Security. Public Health Schools ..... Adv. Page 17
State Medical Societies ..... Adv. Page 34
Tonics and Sedatives ..... Adv. Page 42
Books Received ..... Adv. Page 60
Index to Advertisers ..... Adv. Page 64

Symposium on Ambulatory Surgery

The always-intriguing topic of *Ambulatory Surgery* is the subject of the Symposium in the October Number of the SURGICAL CLINICS OF NORTH AMERICA. Contributors from all sections of the country have prepared practical articles on varicose veins and ulcers; shoulder lesions; breast cysts; etc.

The Symposium was arranged as a result of subscribers' expressed wishes. As a matter of fact, *every* issue of the SURGICAL CLINICS is devoted to a topic that subscribers have asked for. This constant attention to the needs of the profession is what makes the CLINICS so uniformly interesting, so thoroughly helpful.

The SURGICAL CLINICS OF NORTH AMERICA are issued serially, one illustrated number of about 300 pages every other month. Available in cloth or paper binding.

See SAUNDERS Advertisement on next two pages

ROBT W BUXTON MD
UNIVERSITY HOSP
ANN ARBOR MICH

SAUNDERS BOOKS

Kinsey, Pomeroy, Martin, Gebhard—
Sexual Behavior in the Human Female

This new book goes far beyond a mere statistical analysis of sexual behavior patterns in women. It also reports the results of intensive research into *the anatomic and physiologic bases of sexual response in both females and males,* and into *the psychologic factors* which affect sexual response.

Of immense value to the physician will be the data offered on such topics as:

the relative speed of sexual response among females and males

the tactile sensitivity of the various parts of the female genitalia (tests made by 5 gynecologists on 879 women), with a consequent reassessment of the question of clitoral versus vaginal orgasm.

the significance of hormonal factors in sexual response, with special reference to the effect of menopause upon the sexual activity of women

the notable differences between men and women in the matter of sexual responsiveness to psychologic stimuli, and the significance of this difference as a cause of sexual maladjustment in marriage

By Alfred C. Kinsey, Wardell B. Pomeroy, Clyde E. Martin, Paul H. Gebhard, and others on the staff of the Institute for Sex Research at Indiana University. Consulting Editors: Jerome Cornfield, Harold Dorn, Robert Laidlaw, M.D., Karl Lashley, Emily Mudd. 842 pages, 6″ x 9″, with 151 charts, 179 tables, 4 illustrations. $8.00.

Sexual Behavior in the Human Male, published in 1948. $7.50.

New! Bakwin & Bakwin —Behavior Disorders in Children

This wonderfully helpful new book tells you what to do about the behavior problems manifested by so many children during the process of their growing up. The approach is basically a medical rather than a psychiatric one—the authors are pediatricians, not psychiatrists. Whether you treat children or simply raise them, you'll get a wealth of help and reassurance from this cheerful, level-headed book.

By Harry Bakwin, M.D., and Ruth Morris Bakwin, M.D., New York University. 492 pages, 6½″ x 9″, illustrated. $10.00.

New (4th) Edition— Noyes' Modern Clinical Psychiatry

Addition of much new material has made this classic work more useful than ever before as a reference source. In his peculiarly brilliant and careful fashion, Dr. Noyes covers the entire sweep of psychiatry —from the basic principles of psychobiology right down to the latest technics in psychotherapy and psychoanalysis, the use of Antabuse in alcoholism, recently devised surgical procedures, etc. Psychiatrists, internists, many general practitioners will want this book in their libraries.

By Arthur P. Noyes, M.D., Associate Professor of Psychiatry, Graduate School of Medicine, University of Pennsylvania; Superintendent, Norristown State Hospital, Norristown, Pa. 540 pages, 6″ x 9″, illustrated. $7.00. *New (4th) Edition.*

Convenient **SAUNDERS** Order Form on next page ➡

THE JOURNAL of the American Medical Association is published weekly by the American Medical Association. Subscription price, $15.00 a year, 45c a copy. Canadian $16.50. Foreign $19.00. Entered as second class matter June 25, 1885, at the Postoffice at Chicago, Ill., under act of March 3, 1879. Address all communications to American Medical Association, 535 N. Dearborn St., Chicago 10, Illinois

THE JOURNAL
of the American Medical Association
Published Under the Auspices of the Board of Trustees

VOL. 153, NO. 5 CHICAGO, ILLINOIS OCTOBER 3, 1953
COPYRIGHT, 1953, BY AMERICAN MEDICAL ASSOCIATION

MILITARY MEDICINE

CHAIRMAN'S ADDRESS

Richard A. Kern, M.D., Philadelphia

A year ago, when the Section on Military Medicine held its first meeting as an established section of the Scientific Assembly of the American Medical Association, the most significant presentation on the program was the address of the chairman. At that time Dr. Melvin Casberg clearly defined the term military medicine, and outlined the functions and purposes that this section should serve. He also traced the evolution, in the office of the Secretary of Defense, of the Armed Forces Medical Policy Council. This was a most important development as far as the medical profession was concerned, since it provided for the first time at that high level an agency for the general direction, coordination, and control of the medical services of the three military departments and for a practical approach to the common problems of military and civilian medicine. All future chairmen of this section are indebted to Dr. Casberg for this fine chart of past accomplishment, current conditions, and future progress. The task of the present chairman is the easier, since his predecessor has piloted the ship from its very launching through the narrower reaches of the upper channel. Nevertheless, he must log briefly the course made good and the existing and foreseeable hazards, before turning over the wheel to his relief.

Military medicine is the application of sound medical principles to the prevention and management of injury and disease under the conditions imposed by war. These conditions bring into play factors of environment, of numbers of patients, and of administration that differ sharply from those of civilian medical practice. Military medicine further includes the development of new applications of basic medical principles to meet the changing conditions of modern warfare. The field of military medicine therefore involves a never-ending interchange of thought and practice between scientific medicine (with which all physicians are concerned) and the science of war (which concerns the military professions, medical as well as line and other staff corps). This section offers a useful channel through which such an interchange of information may take place in both directions. Medical scientists can here find a forum to present medical advances that have special significance for military uses. Military scientists can here discuss the solutions of new problems posed by changing techniques of warfare.

It would, however, be a narrow concept of the potential usefulness of this section to think of it only in terms of this annual session, with its papers and exhibits. The great majority of the members of this section are civilian physicians who are also medical reservists of the armed forces. As such, we have a double interest and function. We seek and find here the chance to learn new things in military medicine from our colleagues who have made military medicine their life's work; but we should also disseminate that new knowledge and interpret our field to our civilian colleagues, and this we must do all through the year and throughout the country. This does not mean that we should organize more sections on military medicine at state and county levels. That would defeat our purpose of spreading our information as widely as possible. On the contrary, both officers and members of this section should offer their services (not wait to be asked) to program committees of state and county medical societies and be willing to accept such assignments whenever possible. They might take the form of arranging a whole program on a given occasion, but in general they might better be single presentations as part of almost any kind of meeting, so as to reach as large a number of physicians as possible. This section could achieve its greatest usefulness by the sustained fostering of such a program.

Our civilian colleagues have important reasons for welcoming a steady flow of information about military medicine. In case of war, they would constitute the vast proportion of the medical officer personnel of the armed forces. Many physicians would therefore be helped by some foreknowledge of military medicine, even if at this moment they do not hold reserve commissions. But military medicine has a wider potential application, for the conditions of major disaster are quite similar to those of actual warfare. Practically all physicians, especially

Professor of Medicine, Temple University School of Medicine.
Read before the Section on Military Medicine at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

those who live in target areas of potential attack by an enemy, should therefore know the basic facts of military medicine and should be kept abreast of major developments.

This suggests a further need, namely, some instruction in the medical principles of civil defense and in military medicine in all our medical schools. This does not mean another department to be forced into an already crowded curriculum, nor does it mean a few lectures casually slipped in toward the end of the senior year. It does call for a sustained program of instruction throughout the four years, integrated with the existing framework of teaching of the usual medical subjects, and carried out by teachers fitted by background and continued training so to do. Above all, it calls for the fixing, by the dean, of the responsibility for such instruction in a suitable committee of the faculty. Therefore, the pilot programs that were begun this year in five medical schools under the aegis of the Committee on Medical Education for National Defense (MEND) should be watched with great interest. Preliminary reports are highly favorable.

PROCUREMENT OF MEDICAL PERSONNEL

Up to this point the discussion has dealt with military medicine, but it is impossible to separate that topic wholly from the subject of those who practice it, the medical officers. It is now 13 years since the bulk of medical service to the armed forces was provided by a permanent staff of military career physicians. Today, two-thirds of all medical officers on active duty are reservists. It may be a score of years or more before that proportion is reversed. The procurement of both types of medical officers is therefore a matter of the greatest personal interest and concern to all physicians.

We are interested in the building up of the several permanent medical corps to the point where they will constitute two-thirds of the number needed for the present expanded military establishment. This means doubling the present number on the rolls. The significance of this to civilian practice becomes clearer when it is remembered that every permanent medical officer would, over the next six years, replace four reservists.

We are interested in a program of inducting physicians from civilian ranks that would be fair to them, that would maintain an adequate medical service to the public, and that would not unduly dislocate an orderly scheme of postgraduate training. We are interested in the efficient utilization of medical personnel to the fullest extent and within the scope of professional qualifications that circumstances allow, and for only such purposes as justify the diversion of physicians from civilian to military practice. This involves the freest reciprocal use of facilities and personnel between the several services. It does not mean, in my opinion, a single medical corps for all services. In the armed forces a physician is also an officer of Army, Navy, or Air Force. It is no more logical to make a physician an officer of all three than it would be to make any other type of officer polyvalent. It is hard enough, in the time available, to make one kind of officer out of most civilian physicians.

The major problems relating to medical personnel present themselves in the Department of Defense, where until April 1, 1953, they were in the province of the Armed Forces Medical Policy Council. The replacement of that council and the reorganization of the agency dealing with matters of health and medicine in the purview of the Department of Defense will be discussed at this session by the man best qualified on every count to do so, the erstwhile chairman of the Armed Forces Medical Policy Council and now the assistant to the Secretary of Defense (health and medical), Dr. Melvin A. Casberg. The outbreak of war in Korea two years ago provoked the precipitate need for, and the adoption of, a program to provide physicians for the armed forces. This was the "doctor-draft" law (public law 779). The law expired on June 30, 1953, but the need for this law continues. Into its replacement has gone an unprecedented amount of cooperative study and planning by many representatives of the widest range of interested groups. It is hoped that the new law will, as Dr. Casberg expressed it, "step as lightly upon as few toes as possible."

The recruitment of an ample number of physicians who would make a career of military medicine presents an as yet wholly unsolved problem. The virtual stopping of all accessions to the permanent services since the onset of the Korean episode, as contrasted with a fairly constant inflow during many preceding years, strongly suggests that its major cause lies in the "freeze" in effect since 1951, which precludes the acceptance of resignations from the regular services except under conditions of extreme hardship. Young physicians, and even more so their wives, will not enter a service from which, should they not find it to their liking, there is no means of escape. It is therefore highly desirable that they be offered provisional first commissions on a three year basis. An additional inducement might well be offered by the scholarship plan, approved in principle by the Armed Forces Medical Policy Council and reported to this session a year ago by Dr. Casberg. It involves the subvention of acceptable students in medical schools, on nomination by their deans, with obligated military service year for year, and with an escape clause on the basis of monetary refund.

I wish to add to that of others my own disapproval of a device of recruitment that some have suggested; the creation by the government of one or more medical schools to provide physicians for the military and perhaps other federal services. Dr. Casberg last year stressed the obvious dangers: medical inbreeding, a narrowed outlook, an unwarranted self-satisfaction, a loss of contact between civilian and military medicine, and the formation of a medicomilitary caste. The strength of the armed forces medical profession today is rooted in the diversified educational resources of its members. On their diversified origins is also based the solidarity of the military medical profession with the civilian. Each physician of the regular services has a score or more of classmates in civilian practice who see in him not only a bond of professional fellowship with those services but a guarantee of the basic excellence and soundness of viewpoint of the military medical profession. All this would be jeopardized by a separate federal medical school system.

We are not a military-minded people. Many of us are frankly suspicious of military establishments as tools of aggression. As a result, we have found ourselves tragically unprepared at the outbreak of wars. In 1861,

Lincoln dared call for only 90-day volunteers. In the same year in Georgia, Gov. Joe Brown raised militia to serve only within that sovereign state, a policy that he continued in succeeding years to the detriment of the Southern cause. Yet, in 1863, he was reelected by the handsomest of majorities. After each war we have demobilized with unseemly haste, leaving to a few career men the thankless task of looking to our defenses.

The settlers of colonial and frontier days had a more realistic viewpoint. In their experience, war was not heralded by formal declaration, and the cessation of hostilities meant only an armed truce. Therefore, the flintlock musket, loaded and primed, was always hung over the mantel to keep the powder dry. That custom was even safeguarded by the Constitution in the second article of the Bill of Rights. The whole world is in much the same state today. Our hope of national survival rests on being prepared to meet any attack. An adequate trained reserve is the keystone of that preparedness. The chief reason for the existence of this section is to assist in the continued training of our medical reserve. Let us all, therefore, rededicate ourselves to the fulfillment of that purpose.

3401 N. Broad St. (40).

CEREBRAL EDEMA AND ITS RELATION TO BARBITURIC ACID POISONING

Lloyd H. Mousel, M.D., Seattle

The clinical courses of patients who have undergone severe episodes of anoxia are similar. Severity of symptoms and pathological changes depend on the amount of oxygen supplied to the vital organs, the ability of the vital organs to utilize the available oxygen, and the susceptibility of the person to anoxic insults.

Courville [1] gave a complete and classic description of the clinical course and pathological findings in persons who had suffered acute oxygen lack. World War II stimulated interest and investigations in respiratory and circulatory physiology because of the need for high altitude flying. This more than any other factor stimulated a widespread interest in oxygen demand and supply. It changed the pattern of our thinking and emphasized the disastrous results of even mild anoxia. We began to understand that even slightly diminished oxygen tension could cause mental confusion and unconsciousness and also that severer lack of oxygen could result in death within a comparatively short time. We can now review our clinical experiences with a clearer concept of the results of tissue anoxia from any cause.

Lucas [2] reported on an experimental and clinical study of the results of anoxia on the central nervous system. He recorded the effects of mild and prolonged anoxia on the brains of animals and the effects of anoxia on the human brain. Rats survived only one-half to one hour in an atmosphere containing 3% or 4% oxygen. As the oxygen concentration was increased the survival time lengthened, until animals kept in an atmosphere of 9% oxygen survived approximately three days. Animals were then placed in an atmosphere of 9% oxygen for seven hours per day. This group survived for about 9 or 10 days. Microscopic examination of brain tissue taken from animals that died during the experiments showed very little, but, as the anoxia became more prolonged, evidence of damage appeared. This consisted of destruction of nerve cells and loss of Nissl staining properties. The most striking evidence of cell damage was loss of staining qualities of the large pyramidal cells and their eventual disappearance. Small round cells became more deeply stained, more irregular in outline, and shrunken in appearance. A great increase in the number of capillaries was observed throughout the brain. This report indicates that prolonged mild anoxia, in animals at least, can cause severe damage to the brain and that the effect is cumulative.

Seldon and associates [3] have postulated that cerebral edema might be responsible for postanesthetic encephalopathy and have suggested this as a basis for rational treatment. They gave the results of treatment of cerebral anoxia by administration of human serum albumin. Lucas [4] stated that the earliest change in the anoxic brain is an intracellular edema. If this is reabsorbed readily the cell recovers, but if it persists then by purely mechanical means oxygen will be denied rapid access to the cell, so that the anoxia becomes worse and a vicious circle is established that leads to cellular death. He states that withdrawal of fluid from the brain by osmotic means is the basic principle underlying treatment of cerebral edema. This can best be done by use of concentrated human serum in a dose not exceeding 50 ml. per hour, for too rapid dehydration may produce convulsions.

During the last decade the problem of managing patients with acute barbiturate poisoning has grown steadily. The stress of modern living in a highly competitive and uncertain world has led many to seek permanent escape from seemingly insurmountable problems. Barbiturates have claimed their share of these unfortunate victims. The number of deaths from barbiturate poisoning each year probably cannot be determined accurately. Isbell [5] estimates 1,500 deaths per year in the United States, an 8% mortality of all persons

---

Read before the Section on Anesthesiology at the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

Human serum albumin used in this study was furnished by the American National Red Cross through Dr. Louis K. Diamond.

1. Courville, C. B.: Untoward Effects of Nitrous Oxide Anesthesia with Particular Reference to Residual Neurologic and Psychiatric Manifestations, Mountain View, Calif., Pacific Press Publishing Association, 1939.
2. Lucas, B. G. B.: Anoxia and the Central Nervous System: An Experimental and Clinical Study, Thorax **1**: 128 (June) 1946.
3. Seldon, T. H.; Faulconer, A., Jr.; Courtin, R. F., and Pino, D. M.: Postanesthetic Encephalopathy: The Postulation of Cerebral Edema as a Basis for Rational Treatment, Proc. Staff Meet., Mayo Clin. **24**: 370 (July 6) 1949; correction, ibid. **24**: 404 (July 20) 1949. Seldon, T. H., and Faulconer, A. Jr.: Cerebral Anoxia During Anesthesia: Prognostic Significance of Electroencephalographic Changes, unpublished data.
4. Lucas, B. G. B.: Some Observations on Anoxia, Anesthesiology **12**: 762 (Nov.) 1951.
5. Isbell, H.: Acute and Chronic Barbiturate Intoxication, TB 10-76, Veterans Admin. Tech. Bull. (Aug. 15) 1951.

with barbiturate poisoning. Reed, Driggs, and Foote [6] reported on 209 persons treated between 1940 and 1949, with a mortality of 13.4%. They reported a later series of 91 cases with a mortality of 5.5%. These figures represent the results obtained from standard therapy in well-organized services. The mortality figures probably are higher on a national basis.

The treatment of barbiturate intoxication has become fairly standardized, one or a combination of the analeptic drugs being employed along with general supportive therapy. The drugs used most commonly are picrotoxin, amphetamine, caffeine, pentylenetetrazol (Metrazol), nikethamide (Coramine), with picrotoxin the most widely used. Mousel and Essex [7] found that the analeptics were not only useless but actually harmful in treatment of barbiturate overdose. Schmidt [8] wrote, "Direct studies of the oxygen consumption of the brain in situ have shown that cerebral metabolic activity runs parallel to cerebral functional activity and that convulsants may lead to cerebral anoxia (with all its consequences) because they increase oxygen demand beyond the available supply." Reed, Driggs, and Foote [6] reported several deaths among patients with cardiac arrhythmia who had received fairly large doses of picrotoxin, amphetamine, and caffeine, or a combination of these drugs.

Fisher, Walker, and Plummer [9] found that in dogs receiving pentobarbital by mouth the maximum blood concentration was reached within two hours of ingestion and remained constant for several hours. At 6 hours the blood concentration began to decrease, and at 12 hours the blood concentration had fallen to less than 50%. This pattern is probably similar with ingestion of any of the short-acting barbiturates. Why then do patients undergo prolonged periods of deep depression ending either in death or slow recovery? This condition must be ascribed to cerebral edema prolonging the anoxia instead of the original insult or prolonged action of the drug.

TABLE 1.—*Therapy and Clinical Course in Barbituric Acid Poisoning (Case 1)*

Time	Therapy	Reflexes			Area of Cyanosis	Blood Pressure (Mm. Hg)	Pulse (Beats Per Minute)	Respiration (Per Minute)	Other Signs
		Biceps	Knee	Ankle					
April 3, 1949									
3:15 p.m.	Oxygen, 1,000 cc. 5% glucose in isotonic sodium chloride solution intravenously	0	0	0	Nails	100/60	112	28	Withdrawal to pinprick
3:25	1 cc. picrotoxin intravenously.....	0	.....	....	Nails	.....	...	..	
3:35	2 cc. picrotoxin intravenously.....	....	.....	....	Nails	.....	116	28	Slight twitching
4:00	.....	++	+++	++	Nails	110/50	120	..	Intermittent twitching
4:15	2 cc. picrotoxin intravenously.....	++	+++	++	Nails	.....	...	..	Clonus bilaterally
4:30	Lumbar puncture	++	+++	++	Nails	.....	120	..	No response to pain
4:45	3 cc. nikethamide (Coramine) intravenously	++	+++	+	Nails	.....	130	32	Twitching of nose
5:00	300,000 units of procaine penicillin G (Crysticillin) in 1,000 cc. 5% glucose in isotonic sodium chloride solution intravenously	++	+++	+	Nails and lips	110/60	124	28	Muscles spastic, abdomen hard
6:00	500 gm. caffeine intramuscularly.....	++	+++	+	Nails and lips	.....	...	30	
7:00	2 cc. nikethamide (Coramine) intravenously	++	+++	+	Nails and lips	110/50	...	32	Hyperventilation
8:00	.....	++	+++	+	Nails and lips	.....	...	..	Fever rising
9:00	2 cc. picrotoxin intravenously.....	L +, R ±	0	0	Nails, increased	.....	120	36	Temperature 104 F, incontinent urine
10:00	2 cc. epinephrine (Adrenalin) intramuscularly	0	0	0	Nails	100/50	...	36	Urticaria
April 4									
3:15 a.m.	2 cc. picrotoxin intravenously.....	....	.....	....	.....	.....	...	Labored	
10:00	2 cc. picrotoxin intravenously.....	0	0	0	0	110/60	130	36	
12:00 p.m.	.....	0	0	0	0	160/70	140	36	
2:00	Bronchial aspiration, 1,000 cc. serum albumin in 5% glucose and isotonic sodium chloride solution intravenously	....	.....	....	.....	.....	...	..	
3:00	.....	++++	+++	+++	Nails	118/70	130	Easier	Muscles spastic, bilateral clonus
April 5									
1:00 p. m.	.....	....	.....	....	.....	.....	...	..	Active corneal reflexes
2:00	.....	....	.....	....	.....	.....	...	..	Voluntary motion of eyes, face, and head

On the supposition that cerebral edema is probably responsible for the severe complications frequently seen in barbiturate poisoning, a therapeutic plan has been formulated for the treatment of these patients with 25% salt-poor human serum albumin. Three patients with severe barbiturate intoxication have been successfully treated since 1949. All were treated with analeptic drugs before the serum albumin was administered, and in each instance the analeptics failed to improve the patient's condition.

REPORT OF CASES

CASE 1.—A 25-year-old nurse was admitted to the hospital at 3:15 p. m. on April 3, 1949. She had last been seen in a conscious condition at 9:00 p. m. the previous day. At 11:00 a. m. on the day of admission she was found in a comatose condition. Pentylenetetrazol was administered in the home with no clinical response other than coughing. On admission her blood pressure was 100/50 mm. Hg, pulse rate 112 per minute, and the skin was pale and cool; the pupils were approximately 3 ml. in diameter, were uniform, and reacted to light. Physical examination showed no corneal, biceps,

6. Reed, C. E.; Driggs, M. F., and Foote, C. C.: Acute Barbiturate Intoxication: A Study of 300 Cases Based on a Physiologic System of Classification of the Severity of the Intoxication, Ann. Int. Med. **37**: 290 (Aug.) 1952.

7. Mousel, L. H., and Essex, H. E.: An Experimental Study of the Effects of Respiratory Stimulants in Animals Under Pentothal Sodium Anesthesia, Anesthesiology **2**: 272 (May) 1941.

8. Schmidt, C. F.: Recent Developments in Respiratory Physiology Related to Anesthesia, Anesthesiology **6**: 113 (March) 1945.

9. Fisher, R. S.; Walker, J. T., and Plummer, C. W.: Quantitative Estimation of Barbiturates in Blood by Ultra-Violet Spectrophotometry: II. Experimental and Clinical Results, Am. J. Clin. Path. **18**: 462 (June) 1948.

triceps, knee, ankle, or Babinski reflexes. Her body temperature was 97.8 F. The blood sugar level was 116 mg. per 100 cc. The therapy and clinical course are shown in table 1.

At 2:00 p. m. on April 4, her respirations were very labored and caused loud bubbling sounds. A large amount of thick, brown material was aspirated by bronchoscope. Her color appeared slightly improved, and the body temperature was 105.8 F by axilla. An intravenous injection of 100 cc. (25 gm.) of salt-poor human serum albumin was given. Alcohol rubs had no effect in lowering body temperature. The patient was then packed in chipped ice, one-half the body being covered at a time. Her temperature dropped promptly to 102.2 F, and the ice packs were removed. Four hours later the temperature went up to 103.8 F by axilla, and ice was once more applied. The temperature dropped sharply to 101.2 F. At noon on April 5, the patient was still comatose. Deep tendon reflexes were hyperactive, blood pressure was 124/70 mm. Hg, pulse rate 120, and respirations 28 per minute. Frequent tracheal suction was carried out with the use of a catheter and occasionally, a bronchoscope. At 1:00 p. m. corneal reflexes were present for the first time, and the deep tendon reflexes were hyperactive. Tests for bromides and barbiturates in the blood were negative. At 2:00 p. m. the patient began showing signs of voluntary activity. She was given 1,000 cc. of 10% dextrose solution intravenously. Bronchoscopy was performed at 6:00 p. m., and a large quantity of yellowish mucoid material was removed. At 11:10 p. m. she was showing more signs of voluntary activity, trying to get out of bed, coughing actively, and attempting to talk. By early morning of April 6, she was rational and admitted having taken a large quantity of barbituric acid, although the specific drug and the quantity taken were not determined.

TABLE 2.—*Therapy and Clinical Course in Barbituric Acid Poisoning (Case 3)*

Time	Therapy	Blood Pressure (Mm. Hg)	Pulse (Beats per Minute)	Respiration (Per Minute)	Other Signs
July 30, 1952					
3:00 p.m.	3 cc. pentylenetetrazol (Metrazol) intramuscularly	120/70	120	30	Deeply comatose, cyanotic, rectal temperature 103 F, respiration rapid and stertorous
6:00	3 cc. picrotoxin intravenously	.....	...	..	Deep tendon and superficial reflexes absent
6:30	485 gm. caffeine in sodium benzoate intravenously	.....	...	..	
6:50	3 cc. picrotoxin intravenously	.....	...	..	
7:45	3 cc. picrotoxin intravenously	.....	...	..	
8:20	3 cc. picrotoxin intravenously	.....	...	..	
8:22	1 cc. 1:1,000 epinephrine (Adrenalin) intramuscularly	.....	...	..	
8:30	3 cc. picrotoxin intravenously	.....	...	..	
8:50	1 cc. 1:1,000 epinephrine (Adrenalin) intramuscularly, oxygen by nasal catheter	86/60	116	24	
8:55	.....	98/60	...	..	
9:05	3 cc. picrotoxin intravenously	.....	...	..	
9:35	Oxygen by tracheal tube	90/60	100	..	
9:50	.....	86/60	100	..	
10:15	500 cc. salt-poor human serum albumin, intravenously	.....	...	..	
10:50	.....	118/70	106	24	
11:15	.....	108/70	...	..	
July 31					
5:30 a.m.	.....	.....	...	..	Deeply comatose
6:45	.....	130/90	...	..	
8:40	500 cc. salt-poor human serum albumin intravenously	135/100	108	24	7 mg. barbiturates per 100 cc. urine
9:00	.....	136/95	104	28	Temperature 101 F
12:00 p.m.	100 mg. picrotoxin in 1,000 cc. 5% dextrose and water intravenously	.....	...	..	
12:30	.....	142/95	...	..	
1:00	.....	150/100	108	30	
1:30	.....	165/105	...	..	
2:00	.....	200/80	...	..	
2:30	.....	210/60	...	..	Blood pressure irregular, cyanosis increasing
4:00	.....	100/58	...	..	Blood pressure irregular, cyanosis improved
9:00	4 cc. lanatoside C (Cedilanid) intramuscularly	.....	...	..	
10:30	.....	.....	...	..	Beginning to move arms and facial muscles, restless
12:00 a.m.	.....	.....	...	..	Talking incoherently

CASE 2.—A 57-year-old man was admitted to the hospital in a comatose condition at 4:30 p. m. on May 17, 1950. He appeared pale, respirations were weak, and he could not be aroused. The urine contained barbiturates, although quantitative analysis was not done. Blood pressure was 100/60 mm. Hg, pulse 110, and respirations 44 per minute. He was placed in an oxygen tent soon after admission and was given 500 cc. of 5% dextrose in isotonic sodium chloride solution and 40 mg. of amphetamine (Benzedrine) sulfate intravenously. An additional 20 mg. of amphetamine sulfate was given intravenously at 7:00 p. m. The pulse seemed much weaker, and body temperature was 99.4 F rectally, pulse 100, and respirations 34 per minute. Respirations became more labored, and there was evidence of a large quantity of mucus in the tracheobronchial tree. Bronchial aspiration at 10:00 p. m. yielded a large amount of mucus. The patient was given 300 cc. (75 gm.) of salt-poor human serum albumin intravenously over a one hour period. At 11:30 p. m. 20 mg. of amphetamine sulfate was given intravenously. The pulse seemed somewhat weaker, and respirations were very shallow. At 12:00 a. m. body temperature was 99.4 F by axilla, pulse 128, and respirations 26 per minute. At this time, 500 cc. of blood plasma was given. At 1:30 a. m. color was slightly improved, and at 2:30 a. m. blood pressure was 105/68 mm. Hg and pulse 124. Respirations were still shallow. At 3:30 a. m. 1,000 cc. 5% dextrose in water was given intravenously. The pharynx and trachea were aspirated frequently by catheter. At 4:00 a. m. the body temperature was 100 F by axilla, pulse 122, and respirations 26 per minute. The patient was still not responding, although the cyanosis had cleared from his nail beds. At 5:30 a. m. the blood pressure was 118/70 mm. Hg and pulse 120. At this time the patient began moving his legs. At 8:00 a. m. blood pressure was 120/70 mm. Hg. He was moving his legs frequently, and his color was good, but he was still unconscious. At 9:30 a. m. he began trying to open his eyes, and his blood pressure was 120/68 mm. Hg. By 12:00 p. m. he was moving about in bed and appeared restless. By 4:15 p. m. the patient's respirations were regular and deep, and he appeared to be awake and responding, although he was very restless. He tried several times to get out of bed. At 10:00 p. m. he was taking liquids by mouth but was still unable to speak coherently. He seemed to com-

prehend well and obeyed commands. At 7:00 a. m. on May 19, the patient was rational and was asking for relief of pain. Body temperature was normal, pulse rate 100, and respirations 32 per minute. He continued to improve rapidly and was discharged on the fourth hospital day.

CASE 3.—A 49-year-old man was seen by his wife at 10:30 p. m. the evening before admission. At 9:30 the next morning she attempted to arouse him, but he did not respond. One and one-half hours later she tried again to awaken him without success. He was admitted to the hospital on July 30, 1952, at 3:00 p. m. Pentylenetetrazol (3 cc.) was given intramuscularly on admission. His wife reported that two bottles of amobarbital (Amytal) sodium had disappeared. On admission the patient appeared cyanotic and deeply comatose, with rapid, stertorous respirations. The skin was hot and the face and neck flushed. The eyeballs were fixed, and the pupils were 1.5 to 2 mm. in diameter; they did not react to light. Body temperature on admission was 103 F rectally, pulse rate 120, respirations 30 per minute, and blood pressure 120/70 mm. Hg. Bronchial breathing predominated. Heart sounds were muffled and partially obliterated by the breath sounds. Deep tendon reflexes and superficial reflexes were absent. The patient appeared to have barbituric acid intoxication (table 2).

At 12:30 p. m. the blood pressure was 142/95 mm. Hg. At 1:00 p. m. it was 150/100 mm. Hg, pulse 107, and respirations 30 per minute. At 1:30 p. m. the blood pressure was 165/105 mm. Hg, at 2:00 p. m. 200/80 mm. Hg, and at 2:30 p. m. it was 210/60 mm. Hg, with irregular pulse and increasing cyanosis. The intratracheal tube was removed and replaced, and the trachea was aspirated. Administration of picrotoxin was discontinued. At 4:00 p. m. his color was improved; the blood pressure had decreased to 100/58 mm. Hg, and the pulse was very irregular. The patient was beginning to move his arms and face. He was digitalized, receiving 4 cc. of lanatoside C (Cedilanid) intramuscularly at 9:00 p. m. At 10:30 p. m. he was restless and trying to sit up in bed. At midnight he was talking incoherently, asking for his wife, and insisted on going to the bathroom. He continued to improve and was able to eat a large lunch on Aug. 1. Digitalis was given for the next few days, and chloral hydrate was given in 15 grain (0.97 gm.) doses for sedation. The patient was discharged to a sanatorium on Aug. 8, 1952. During the acute episode of hypertension, when the systolic blood pressure had gone over 200, picrotoxin was withdrawn because of rapid irregular respiration. Electrocardiograms showed myocardial damage with apparent pericarditis.

SUMMARY AND CONCLUSIONS

The recovery phase in all three patients was similar. In cases 1 and 3 return of reflexes occurred at 23 and 17 hours respectively after serum albumin was given. Return of reflexes occurred eight hours after serum albumin was given in case 2. All of the patients showed signs of voluntary activity and return of consciousness within a few hours after return of the deep reflexes. There were no maniacal tendencies, and restraints were not required. This is in sharp contrast to the behavior of many patients recovering from barbiturate poisoning when the usual therapeutic agents are used.

Definite conclusions cannot be made from the study of three cases; however, the response to, and results of, the treatment were so uniform that further study seems warranted. This report is made with the hope that the use of analeptics will be abandoned in treatment of barbiturate intoxication. Treatment should be directed toward correcting the cerebral anoxia by eliminating cerebral edema through the use of salt-poor serum albumin or some other agent that will accomplish the same result by action of its high osmotic pressure in drawing the intracellular fluid back into the circulation. General supportive treatment such as adequate oxygen and fluid therapy is essential, and measures should be taken to lower body temperature in patients who have hyperthermia.

803 Summit Ave.

SULFOBROMOPHTHALEIN CLEARANCE TEST

Raymond D. Goodman, M.D.
and
George R. Kingsley, M.S., Beverly Hills, Calif.

One of the most frustrating experiences facing the clinician today is the study of liver function. Since several excellent reviews on this subject appear annually, there is no need to recount the extensive literature in this report. It is conservative to say that the liver is probably involved in more physiologically different processes than any other organ in the body; thus, it is exceedingly difficult to designate any single test as "the" indicator of liver function. Even the liver biopsy, which is a valuable tool in the identification of liver disease, cannot serve as sole index to liver functions. Microscopic analysis indicates whether the structure appears normal or abnormal, but in neither case can it reveal to what extent the function of this structure is altered. In an attempt to obtain a quantitative assessment of liver function, we described, in a previous publication, a modification of the sulfobromophthalein (Bromsulphalein) excretion test based on the measurement of sulfobromophthalein clearance.[1] The purpose of this report is (1) to introduce several improvements in the procedure and (2) to summarize our experiences in a significant number of cases.

From the Medical Service, Wadsworth Hospital, Veterans Administration Center, Los Angeles, and the departments of medicine and physiological chemistry, School of Medicine, University of California, Los Angeles.

Dr. J. V. Monke aided in the study of group 2, and Mrs. Louise Wollin helped prepare the manuscript.

1. Goodman, R. D.: Bromsulfalein Clearance: A Quantitative Clinical Test of Liver Function, J. Lab. & Clin. Med. **40**: 531-536 (Oct.) 1952.

METHOD

Prerequisite Conditions.—The patient must meet the following requirements. He must have been in a fasting state for 10 hours, have no fever and no jaundice (icteric index less than 20 units), and be in a supine position during the test.

Procedure.—There are seven steps in the procedure. 1. Weigh and record the weight of patient in kilograms. 2. Draw and exact volume of sulfobromophthalein solution to the nearest 0.1 ml. of dye solution (50 mg. per milliliter) into a sterile 10 ml. syringe so that the injected dose will be 5 mg. per kilogram of body weight. 3. Inject

the sulfobromophthalein intravenously at a constant rate (injection should require about 30 seconds) and start timing the test when half of the dose has been given. A stop watch is preferred, but the sweep second hand of an ordinary watch may be used. Let the stop watch continue to run. 4. At approximately five minute intervals after the injection, withdraw 5 ml. samples of blood, transfer them quickly to 120 by 12 mm. test tubes and allow the blood to clot. Do not force blood through needles; do not add blood foam with the sample to the test tube; and do not shake the tubes. Hemolysis must be avoided. 5. For accurate timing, compute the mean time of blood samples according to the following schedule:

Start	Stop	Mean Time
5′ 10″	5′ 30″	5′ 20″
10′ 15″	10′ 30″	10′ 23″
14′ 25″	14′ 38″	14′ 32″

Starting time should coincide with appearance of blood, stopping time with the end of withdrawal.

Four samples should be used, and they should be taken at approximately 5, 10, 15, and 20 minutes (all within the first 20 minutes). 6. Add 0.5 ml. of cell-free serum,

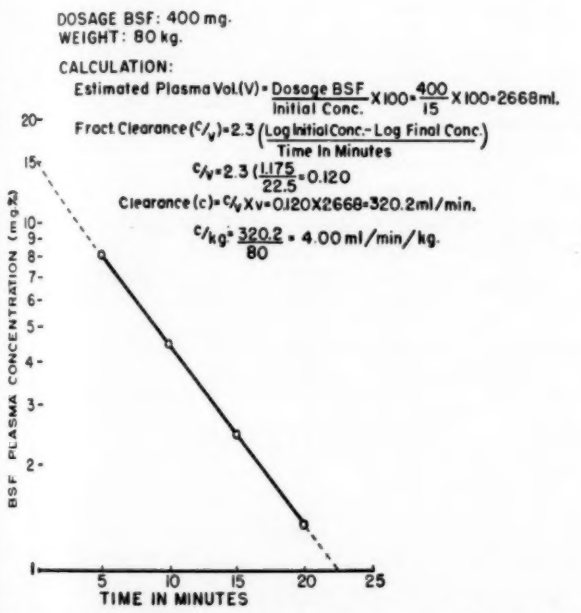

DOSAGE BSF: 400 mg.
WEIGHT: 80 kg.
CALCULATION:
Estimated Plasma Vol.(V) = Dosage BSF / Initial Conc. X 100 = 400/15 X 100 = 2668 ml.
Fract. Clearance (C/V) = 2.3 (Log Initial Conc. - Log Final Conc.) / Time In Minutes
C/V = 2.3 (1.1175/22.5) = 0.120
Clearance (c) = C/V X v = 0.120 X 2668 = 320.2 ml/min.
C/kg = 320.2/80 = 4.00 ml/min/kg.
BSF PLASMA CONCENTRATION (mg%)
TIME IN MINUTES

Fig. 1.—Sulfobromophthalein clearance calculated according to graph and formulas.

which has not hemolyzed, after centrifugation from each sample taken after dye injection to photometer tubes, each containing 5 ml. of 0.1 N sodium hydroxide; mix this. Also, in order to prepare blanks, add 0.5 ml. of serum from each sample to photometer tubes, each containing 5 ml. of 0.1 N hydrochloric acid. Set the photometer at 100% transmission. The dye concentration is calculated from the optical density of the test solution at 575 mcg. light transmission. A Coleman Junior spectrophotometer was used in this study. 7. plasma dye concentration is plotted against time in minutes on a two cycle semilog graph, and the result is obtained by following the steps indicated in figure 1.

Standardization.—The method is standardized by diluting 0.5, 1, 2, 3, 4, and 5 ml. of a stock dye standard (0.1 ml. of 5% dye solution from Hynson, Dunning, and Wescott ampul diluted to 500 ml. with 0.1 N sodium hydroxide) to 5 ml. with 0.1 N sodium hydroxide solution. Add 0.5 ml. of normal pooled serum to each tube and mix. Prepare a blank by adding 0.5 ml. of normal

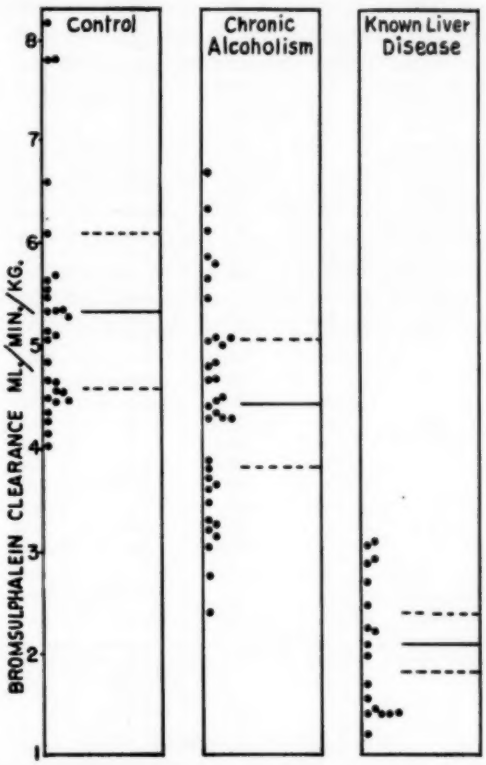


Fig. 2.—Results of sulfobromophthalein clearance tests in three groups of patients.

pooled serum to 5 ml. of 0.1 N hydrochloric acid and mix. Set blank at 100% transmission with light transmission at 575 mcg. Record transmission of each dilution and make a table for conversion of the per cent transmission to milligrams of dye per 100 ml. of serum.

SELECTION OF PATIENTS

All of the patients included in this study were men in a large general hospital. They were divided into three

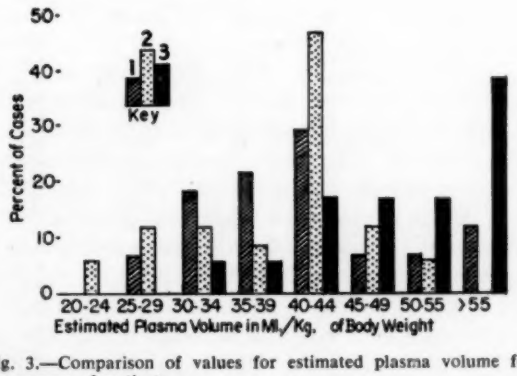


Fig. 3.—Comparison of values for estimated plasma volume found in three groups of patients.

categories according to certain specifications. Those in group 1 had no history or clinical evidence of liver disease at any time and no history of chronic alcoholism or other contact with hepatotoxic agents. Those in group 2 had a history of chronic alcoholism; no history or clini-

TABLE 1.—*Data on Patients with No Evidence of Liver Disease*

No.	Diagnosis	Age	Weight, Kg.	EPV*	EPV/Kg.	Icteric Index	Prothrombin Time†	A/G Ratio	Cephalin Flocculation‡	Thymol Turbidity	Thymol Flocculation	BSP Clearance§
1	D. ulcer	55	72	2610	36.3	..	..	.....	..	..	..	5.15
2	E. ulcer	37	80.5	2000	24.8	3	100	5.1/2.2	0	4	..	4.50
3	G. ulcer	50	70	2920	41.7	..	..	.....	..	..	..	5.35
4	G. ulcer	64	82	3250	39.6	..	..	.....	..	..	..	4.18
5	D. ulcer	39	57	1800	31.6	10	..	.....	..	..	..	4.43
6	Cancer, stomach	32	66.5	3020	45.4	..	..	4.2/1.9	..	..	..	5.10
7	D. ulcer	30	60	2080	34.7	..	..	4.9/1.6	..	..	..	5.35
8	D. ulcer	57	71	2250	31.7	..	..	5.1/2.4	1+	5	..	4.58
9	D. ulcer	59	80	2520	31.5	..	..	.....	..	..	..	4.03
10	Gastritis	52	60	3700	61.7	..	..	.....	..	..	..	4.54
11	G. ulcer	31	60	3470	57.8	..	..	3.7/1.6	..	..	..	4.46
12	D. ulcer	33	65	3360	51.7	..	..	.....	..	..	..	5.66
13	D. ulcer	52	81	2250	27.8	..	..	.....	..	..	..	5.36
14	D. ulcer	64	48	3150	65.6	..	..	.....	..	..	..	7.80
15	D. ulcer	37	66	2810	42.6	..	..	.....	..	..	..	5.65
16	D. ulcer	35	74	3160	42.7	..	..	.....	..	..	..	5.10
17	D. ulcer	45	63	2620	41.6	..	..	.....	..	..	..	5.68
18	D. ulcer	45	60	2660	44.3	..	..	.....	..	..	..	4.68
19	N. P.	35	68	2700	39.7	..	..	.....	..	..	..	5.50
20	D. ulcer	30	85	3900	45.9	..	1)	4.5/2.2	..	..	..	4.30
21	Normal	40	61	2700	44.3	..	..	.....	..	..	..	4.64
22	D. ulcer	42	79	2540	32.2	..	..	.....	..	..	..	4.38
23	Epilepsy	44	64	2200	34.4	..	..	.....	..	..	..	5.30
24	N. P.	38	73	2590	35.5	6	..	.....	0	9	0	7.80
25	N. P.	33	66	2340	35.5	5	..	.....	1+	5	0	6.60
26	N. P.	26	68	2410	35.4	4	..	4.07/3.5	0	5	0	8.16
27	N. P.	40	91	4870	53.5	..	..	.....	..	..	..	6.10
28	N. P.	36	87	3007	34.6	..	..	.....	..	..	..	4.85
	Mean				40.9	..	..	.....	..	..	..	5.33
	Standard deviation				6.16	..	..	.....	..	..	..	0.75
	% of mean				15.1	..	..	.....	..	..	..	14.1

* Estimated plasma volume, ml.
† % of normal.
‡ In 24 hours.
§ Ml./min./kg.

TABLE 2.—*Data on Patients With Chronic Alcoholism Without Clinical Evidence of Liver Disease*

No.	Age	Weight, Kg.	EPV*	EPV/Kg.	Icteric Index	Prothrombin Time†	A/G Ratio	Cephalin Flocculation‡	Thymol Turbidity	Thymol Flocculation	BSP Clearance§
1	45	75	1490	19.9	6	...	.....	0	2	0	2.39
2	32	98	3890	39.7	7	...	.....	0	4	0	3.33
3	29	75	2980	39.7	6	...	.....	0	4	0	4.76
4	52	72	3000	41.7	3	...	.....	1+	4	1+	3.58
5	34	72	3180	44.2	7	...	.....	0	2	0	4.65
6	32	64	2600	40.6	3	...	.....	0	4	0	4.70
7	34	96	2700	28.1	3	...	.....	0	3	0	4.42
8	40	68	3300	48.5	20	...	.....	0	0	0	5.87
9	45	68	3300	48.5	4	...	.....	0	4	..	4.35
10	30	68	2840	41.8	9	...	.....	0	9	0	5.05
11	36	64	2640	41.3	12	...	.....	0	3	..	4.30
12	32	64	3400	53.1	5	...	.....	0	..	..	5.80
13	29	68	3400	50.0	4	...	.....	1+	2	0	6.35
14	31	82	3250	39.6	2	...	.....	0	2	0	4.45
15	29	68	2900	42.6	2	...	.....	0	5	0	5.47
16	37	77	3100	40.3	2	...	.....	0	4	0	4.32
17	42	87	3100	35.6	..	...	.....	..	..	..	3.50
18	33	80	2670	33.4	..	...	.....	..	..	..	3.70
19	56	57.3	2470	43.1	..	100	4.7/1.8	0	5	0	3.79
20	30	75	2840	37.9	5	...	.....	0	6	0	6.14
21	33	91	3040	33.4	8	...	.....	0	3	0	3.21
22	41	58	1450	25.0	8	...	.....	0	4	0	4.52
23	58	82	3250	39.6	4	...	.....	0	4	0	4.33
24	36	92	1830	19.9	4	...	.....	0	4	0	3.14
25	36	87	3450	39.7	..	...	.....	..	..	..	4.82
26	41	60	1890	31.5	3	...	.....	..	5	..	5.67
27	45	60	2680	44.7	..	...	.....	..	..	..	5.14
28	45	78	3400	43.6	12	100	3.2/1.9	2+	10	0	5.00
29	59	80	3180	39.8	5	...	4.2/3.5	0	2	0	3.88
30	34	96	2760	28.7	6	...	.....	0	9	±	2.78
31	40	59	2640	44.7	4	...	.....	0	2	0	6.70
32	43	89	2560	28.8	7	...	.....	0	8	±	3.33
33	30	73	3100	42.5	4	...	.....	0	8	±	5.06
34	27	100	3300	33.0	..	...	.....	±	6	+	3.62
35	43	65	2470	38.0	..	...	.....	..	..	..	3.04
	Mean			38.4	..	...	.....	..	..	..	4.43
	Standard deviation			4.93	..	...	.....	..	..	..	0.63
	% of mean			12.8	..	...	.....	..	..	..	14.1

* Estimated plasma volume, ml.
† % of normal.
‡ In 24 hours.
§ Ml./min./kg.

cal evidence of liver disease at any time; no history of recent acute alcoholism; and good nutritional status for several weeks prior to testing. Those in group 3 had known liver disease, either past or present. Ten of the 18 patients in group 3 had liver biopsies confirming the clinical diagnosis.

All of the patients were hospitalized and received thorough medical examinations, including routine blood and urine tests. Group 1 consisted chiefly of convalescent patients from the medical service. These patients had recovered from their initial complaints and were nearly ready for discharge. Group 2 consisted entirely of patients from the neuropsychiatric service. They were hospitalized for disulfiram (Antabuse) therapy and rehabilitation. Group 3 consisted mainly of patients in different stages of cirrhosis of the liver, irrespective of etiology.

TABLE 3.—*Data on Patients with Known Liver Disease*

No.	Age	Weight, Kg.	EPV*	EPV/Kg.	Icteric Index	Prothrombin Time†	A/G Ratio	Cephalin Flocculation‡	Thymol Turbidity	Thymol Flocculation	BSF Clearance§
1	55	84	3300	39.3	11	70	3.6/3.1	4+	6	..	1.40
2	62	72	3000	41.7	8	100	.....	2+	5	..	2.88
3	59	70	5180	74.0	17	64	2.7/3.1	4+	10	3+	1.45
4	44	57	2850	50.0	3	77	3.6/2.4	0	5	0	3.03
5	53	76.5	2350	30.7	..	...	.....	...	..	..	2.71
6	37	53.6	3185	59.4	40	44	3.6/2.4	3+	21	3+	1.40
7	59	64.5	2950	45.7	5	58	.....	3+	5	1+	2.91
8	47	87	4140	47.6	8	88	.....	3+	18	..	2.26
9	56	71	4200	59.2	11	100	4.2/1.9	3+	4	0	2.40
10	35	77.7	4250	54.7	20	...	2.9/2.2	3+	24	4+	1.43
11	64	67	2920	43.6	3	100	4.4/2.4	1+	12	0	3.09
12	54	84.8	3960	46.7	9	100	5.5/2.2	0	1	0	2.10
13	77	62	2450	39.5	5	64	4.4/2.9	0	2	..	1.97
14	52	62	3690	59.5	..	...	4.2/2.2	0	6	0	1.68
15	46	64	3230	50.5	15	...	4.2/2.1	0	4	0	2.21
16	52	73	4200	57.5	..	...	.....	4+	45	..	1.20
17	41	68	3970	58.4	21	88	.....	...	..	..	1.40
18	29	70	3680	52.6	..	...	.....	...	..	..	1.55
Mean				50.6	..	...	.....	...	..	..	2.06
Standard deviation				6.0	..	...	.....	...	..	..	0.30
% of mean				11.9	..	...	.....	...	..	..	14.6

* Estimated plasma volume, ml.
† % of normal.
‡ In 24 hours.
§ Ml./min./kg.

RESULTS

The data on 81 patients appear in tables 1, 2, and 3. Wherever possible, additional tests of liver function were obtained, namely, icteric index, prothrombin time, albumin-globulin ratio, cephalin-cholesterol flocculation, thymol turbidity, thymol flocculation, and liver biopsy. In addition, an estimate of the plasma volume was made in each test, since it can be computed from this technique. The data on sulfobromophthalein clearance are graphed in figure 2. The solid horizontal line in each column represents the mean value, while the broken horizontal lines indicate the standard deviation from the mean. Figure 3 shows the range and distribution of estimated plasma volume determinations made by this procedure.

The separation of groups 1 and 3 is clearly evident (fig. 2). All of the values in the control series yielded values above 4 ml./min./kg., while nearly all the values in the group with liver disease fell below 3 ml./min./kg. Group 2 is of special interest because 37% of the values fell below 4 ml./min./kg., and prior to testing there was no reason to expect such results. In group 3, it is of further interest to note that the eight patients who did not have liver biopsies nevertheless had sulfobromophthalein clearance values within the same range as those who had confirmatory biopsies. The data on estimated plasma volumes for groups in which no liver disease was evident showed essentially a normal distribution about the mean (40 ml./kg. of body weight); a much higher plasma volume was consistently found for patients having liver disease.

COMMENT

The advantages of this test over the conventional 45 minute sulfobromophthalein retention test have been described previously.[1] The value of any clinical laboratory test depends on its safety, reliability, simplicity, reproducability, and economy. Enormous quantities of sulfobromophthalein have been used in the past 25 years with reportedly few toxic effects. No unpleasant reactions were observed in any of our patients. The data on clearance correlate well with the clinical observations made in this study. We have shown in both controls and persons with chronic liver disease that the clearance test can be repeated in 24 hours, one week, or two months and still give a check within 5% of the original value. The same observations were made by earlier investigators who were studying sulfobromophthalein excretion rates. Through the past two decades many chemical tests of liver function have been discarded, but the sulfobromophthalein test has remained a favorite of many.

The clearance test is, indeed, simple. It requires no expensive reagents or complicated laboratory procedures. Twenty minutes of the examiner's time is far less than that required for the ordinary tolerance tests. Even the mathematical computation has been condensed into a formula that any trained technician can readily solve.

The clinical data from this study require very little discussion. We have expressed liver function quantitatively in a manner that provides a clearcut separation between our controls and those with liver disease. The fact that alcohol is a predisposing, if not causative, agent

in the production of liver injury is certainly supported by the results in group 2.

We also want to emphasize that in each case studied an estimate of plasma (or serum) volume was made by conventional dye dilution procedures. The arbitrary use of a universal standard such as 40 or 50 ml. per kilogram of body weight is bound to engender greater sources of error. Our knowledge of liver disease, for example, has already revealed by other methods that the extracellular compartments undergo drastic changes from the normal state. It seems only reasonable, therefore, that a direct measurement of the plasma volume be made in each person studied by clearance techniques.

SUMMARY

Sulfobromophthalein (Bromsulphalein) clearance determinations were made in 81 patients. The control group had a mean value of 5.33 ± 0.75 ml./min./kg. All of the values for the control group were above 4 ml./min./kg. The group of patients with definite liver disease had a mean value of 2.06 ± 0.30 ml./min./kg., and no value was above 3 ml./min./kg. The patients who were chronic alcoholics had a mean value of 4.45 ± 0.63 ml./min./kg. Although this mean was only slightly less than that of the control group, 37% of the values were below the lowest value obtained for any of the controls.

This test is safe, simple, rapid, and reliable and gives more information than previously reported modifications of the sulfobromophthalein test. The added value of using sulfobromophthalein disappearance to estimate the plasma volume deserves further consideration and investigation. We do not wish to imply that this test is the best test of liver function, since it is doubtful that there will ever be a single test to rely on. We have been encouraged by our results and hope that others will be stimulated to adopt this technique.

444 N. Bedford Dr. (Dr. Goodman).

NATAL DAY DEATHS

THE LONG-NEGLECTED FIELD OF INFANT MORTALITY

Herman N. Bundesen, M.D., Sc.D., Chicago

Our recent 14-year study of 10,000 neonatal deaths with satisfactory postmortem examinations and complete clinical investigations indicates that too many infants continue to die needlessly, especially during the critical early days of life. We are still doing too little, too late, and not too well for too few in the long neglected field of infant mortality. That is why the present level of early infant deaths still presents a major problem. Those responsible for this failure to reduce early infant mortality include health officers, obstetricians, pediatricians, hospital administrators, and all others concerned with the care of the pregnant woman and her newborn infant.

The task that confronts the health officer, whose duty it is to contribute to a reduction in the number of needless infant deaths, is to plan a definite program aimed specifically at reducing the number of such deaths in the areas in which they are most frequent and to see that this program is put into action and carried out to the letter. Such a program, to be most effective, should be planned and carried out in cooperation with physicians, hospital administrators, and nurses.

Before the health officer can plan and put this cooperative program into action, he must adopt the following procedures: 1. He must carefully analyze and evaluate all infant deaths occurring within his jurisdiction, to determine the age and weight groups in which most of them occur. 2. He must make every effort to see that the causes of death as given on the death certificates are the true anatomic causes. 3. He must determine from such correct certificates the most frequent actual causes of death and by investigations find the factors contributing to the deaths in the age and weight groups in which the majority are occurring. 4. He must reanalyze and audit his existing plan for controlling infant mortality and, in the light of these analyses, determine wherein it is failing to produce results, so that it may be altered accordingly. 5. He must vigorously and aggressively make his plan operative and keep it operative once he has adopted it.

This type of program has been instituted in Chicago, and it has been found that over half of all infant deaths (52.0%) now occur within the first three days of life—more than on the other 362 days of the first year combined. More than half of these early deaths (53.2%) occurred in infants with a birth weight under 1,500 gm. In Chicago, the great majority of neonatal death certificates now do carry the accurate anatomic cause of death because postmortem examinations are performed in over 85.0% of these deaths. These accurate death certificates, but more particularly a study of satisfactory postmortem examinations,[1] have shown that almost three-fourths (70.0%) of the early deaths occurred from just two causes, abnormal pulmonary ventilation (respiratory distress) and injuries at birth.

It is these early deaths that comprise the long-neglected field of infant mortality, and it is in this field particularly that the Chicago Board of Health's plan for reducing mortality has failed to produce the desired results. After reanalyzing our existing plan, we have found that it did not produce the desired results because of two types of failures: 1. We concentrated our efforts

President, Chicago Board of Health.

Read in the Symposium on Prevention of Needless Neonatal Deaths before the Section on Pediatrics at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

1. To be considered satisfactory, a postmortem examination (1) must be done by a competent pathologist, familiar with fetal and infant disease, (2) must include a gross examination of the entire body including the brain and cranial cavity, (3) must include a microscopic examination of any tissues necessary to make an accurate diagnosis, and (4) must include a complete report of the results of the examination. Whenever the postmortem record stated that microscopic examinations of all important tissues were not made, but the cause of death was obvious to the trained pathologist from the examination made, the postmortem was also considered satisfactory.

neither on the deaths in the low weight groups nor against the two commonest causes of early deaths, abnormal pulmonary ventilation and injuries at birth. 2. Although we had formulated regulations for maternity divisions and newborn and premature nurseries, these regulations did not provide for constant and consistent optimal care for mothers and their infants. Moreover, we failed to enforce to the letter the regulations we had.

Frankly, in retrospect, we now realize that self-satisfaction with what we had already accomplished diverted attention from the long-neglected field of infant mortality, and thus we did not make progress in reducing the number of early infant deaths. Thus, from 1935 to 1946, a period in which comparable figures of other cities were obtainable, the infant mortality of Chicago was the lowest among the now 10 largest cities in the United States; however, from 1941 to 1946, the rate for Chicago remained almost static but still was lowest among the 10 largest cities. After 1941, the infant death rates in most of the other large municipalities continued to decline gradually and finally reached about the same level as that of Chicago, although the rate in Chicago for the combined period from 1940 to 1950 is lower than that of any of the 10 largest cities in the United States (table 1).

TABLE 1.—*Comparison of Births, Infant Deaths, and Infant Mortality for the Ten Largest Cities in the United States from 1940 to 1949**

City	No. of Births	No. of Infant Deaths	Combined Infant Mortality
Chicago	691,519	19,645	28.4
New York	1,351,608	39,148	29.0
Los Angeles	368,743	11,017	29.9
Cleveland	196,734	6,323	32.1
Detroit	377,388	12,368	32.8
St. Louis	172,475	6,008	34.8
Philadelphia	389,818	14,060	36.1
Boston	158,781	5,850	36.8
Baltimore	204,632	7,940	38.8
Washington, D. C.	177,677	7,225	40.7

* Data were taken from the annual reports "Vital Statistics of the United States" published by the National Office of Vital Statistics, Federal Security Agency, United States Public Health Service, for the years 1940-1949.

Since by 1950 we had become too complacent about our then low infant death rate we did not investigate carefully when and why so many of our smaller infants were continuing to die. Although we had completed our study of 10,000 neonatal deaths, we failed to interpret properly the facts that this study revealed. We failed to take cognizance of the high mortality among the very small infants dying perinatally (just before, during, or immediately after birth) and particularly during the first three days of life and, therefore, made little effort to reduce this high rate. We were misled by failure to subdivide the deaths of the neonatal period into more restricted groups. Therefore, it took us too long to carefully analyze and then use all the actual facts about the specific delimited group of natal day deaths. Since we did not have these facts, we could not attack the problem of these deaths at the points where most of the attack should have been centered.

Just as up to 1935, in attempting to control deaths at various ages, there was too much stress on reducing infant mortality and too little on reducing neonatal mortality, so now there is too much stress on neonatal mortality and too little stress on natal day mortality, or better still on deaths during the first three days. Up to 1938, we based our preventive efforts on the inaccurate causes of death as shown on the ordinary death certificates without a satisfactory postmortem examination, just as most health officers did and as many still do. In 1935, we began our study to determine the actual anatomic causes of death as revealed by our satisfactory postmortem examinations. By 1938,[2] we were fully convinced that the causes given on most death certificates were inaccurate and misleading and hence were misguiding health officers in their preventive efforts. As early as 1938, we were beginning to recognize that the two main causes of death against which preventive efforts had to be exerted were abnormal pulmonary ventilation (respiratory distress) and injuries at birth. Nevertheless, we failed to take action against deaths from these two causes in the early age, low weight groups. Many of these deaths could have been prevented by early aggressive corrective action in providing the best possible prenatal care of the mother, natal care of the mother and infant, and immediate postnatal care of the infant.

In the control of infant mortality the greatest effort must be concentrated on the groups in which most of the deaths are occurring. It predicates that infant mortality has become static because insufficient preventive efforts have been exerted toward the age, weight, and known cause of death groups, in which most deaths occur.

For some years now every neonatal death has been investigated in Chicago, and it has been found that far too many were preventable during the first day of life. The major causes of these needless deaths and the problems of their prevention differ markedly from those during the remainder of the first month. Because of this fact, it has been felt essential to separate the deaths on the first day from those in the remainder of the first month, and the deaths occurring on the first day of life are called natal day fatalities.

NATAL DAY MORTALITY

Based on data on 10,000 neonatal deaths, the greatest problem confronting those interested in reducing infant mortality today seems to be to determine what preventive efforts should now be directed primarily toward reducing natal day mortality. Actually, during 1952 in Chicago, over one-third (35.6%) of all infant deaths occurred on the critical natal day.

We believe that a significant reduction in infant mortality rates could be effected by making an intensive attack on the causes of deaths that occur during the first hour, the first eight hours, the first day, and the first three days of life. For example, in Chicago, in 1952 the deaths of infants in the first hour after birth represented 27.2% of the deaths of the first eight hours, those during the first eight hours represented 66.5% of the deaths on the first day, those on the first day represented 68.4% of the deaths of the first three days, and those on the first three days represented 73.1% of the deaths of the first 28 days and 52.0%, or more than half, of the deaths of the first year.

2. Bundesen, H. N., and others: Factors in Neonatal Deaths, J.A.M.A. **111**:134-141 (July 9) 1938.

A comparison of Chicago rates in 1912 with those in 1952, which are similar to those in many other parts of the United States, shows that during the last 40 years there has been practically no reduction in the mortality of the first day of life (fig. 1). For example, in 1912, the death rate for the first day of life was 11.1 per thousand live births. By 1952, the natal day death rate was 9.4, a reduction of less than two for every thousand live births. On the other hand, the death rate in 1912 for infants dying during the first month of life (neonatal [3] death rate) was 46.2 per thousand live births. By 1952, it was 18.9, a reduction of 27 for every thousand live births, most of which reduction was in deaths occurring after the first week. Even more startling is the fact that the death rate in 1912 for infants dying during the first year of life was 118.6 per thousand live births. By 1952, it was 26.4, a reduction of 92 for every thousand live births, most of which reduction was in deaths occurring after the first month (fig. 1). During these 40 years, in Chicago as almost everywhere else, there has been a great reduction in the death rate under 1 year (nearly all of which was in the period 1 through 11 months), about one-third as much reduction in the death rate under 1 month, but, by comparison, practically none in the death rate under 1 day.

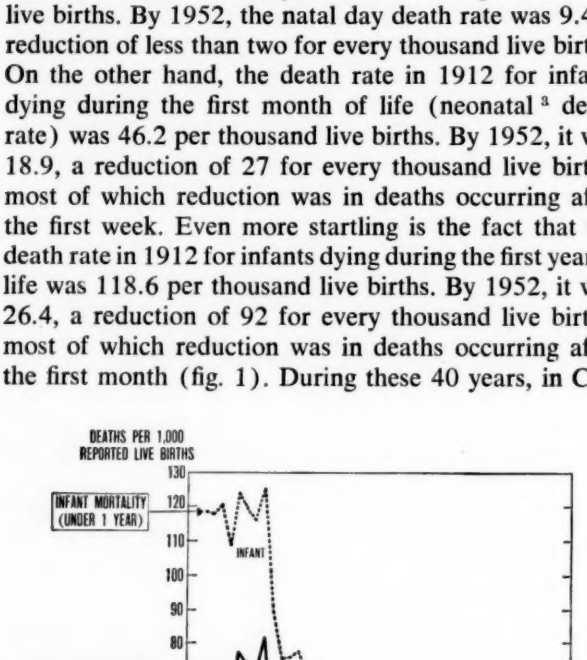


Fig. 1.—Infant, postneonatal, neonatal, postnatal day, and natal day mortality in Chicago, 1912-1952.

In 1934, the natal, postnatal, and postneonatal death rates per thousand live births reached the same level, because postnatal and postneonatal deaths were declining while the natal day death rate was remaining constant. Moreover, since 1934, these two rates have continued to decline, so that the natal day deaths have become an ever-increasing proportion of the total infant deaths, and now in 1953 natal day deaths are the major pressing problem in the control of infant mortality. In 1912, the natal day deaths comprised only 1/10 of the total infant deaths, while in 1952 they comprised over 1/3 of these deaths. Over a 40 year period natal day fatalities (under one day) have been reduced only 1/53 as much as the infant deaths (under one year) and only 1/15 as much as neonatal deaths (over one day).

3. The definition of the World Health Organization for neonatal is the period under 28 days.

CLASSIFICATION OF FATALITIES INTO AGE GROUPS

In the last 40 years most health officers seem to have overlooked the full significance of the large number of preventable deaths occurring on the first day of life. This has come about largely because the usually acceptable age group classification of deaths of "under 1 month" and "under 1 year" is grossly misinforming and thus misleading. It is misinforming because all deaths under 1 month are grouped together even though the rate of death on the various days of the neonatal period differ greatly, the birth weights of the infants dying during the various parts of the neonatal period also differ to a great extent, and the causes for the deaths during the various parts of the neonatal period are different to a great degree. Therefore, to be accurate and informative it is necessary to classify neonatal deaths in four age groups, depending on the weight groups in which most of the deaths occur and the causes for all deaths.

On this basis, our studies have convinced us that neonatal deaths should be classified into four groups, namely, deaths that occur during the first day, during the first three days, during the first week, and during the period 7 to 27 days, inclusive, instead of just into one group of under 28 days, as is now done. Therefore, we have classified the neonatal deaths in our series in these four age groups, and we have labeled them with what we believe to be definite, descriptive terms as natal day deaths (first day), tridiem deaths (first 3 days), hebdomadal deaths (first week) and posthebdomadal deaths (7 to 27 days). In studying these deaths we have classified them by age, weight, and cause, and not just by age or weight or cause alone.

The percentage distribution of our accurate seven causes of death in age periods show that our classification by age groups and cause of death is a logical one and clearly shows the direction in which our preventive efforts may be most effective (table 2). It will be noted from this table that, during the first day and the first three days, the proportion of deaths from abnormal pulmonary ventilation and injuries at birth combined far exceeds that of all other causes of death. During the balance of the first week (three to seven days), the proportion of deaths from abnormal pulmonary ventilation decreases materially, whereas the proportion of deaths from infection and blood dyscrasias combined increases directly with age. In the distribution for the posthebdomadal deaths (after the first week), infections and malformations become the leading causes of death, while abnormal pulmonary ventilation and injuries at birth decline (fig. 2).

A sensible classification of infant deaths into more delimited age groups by cause of death (and by weight as well), when the causes are determined by satisfactory postmortem examinations, will make the figures especially informative. Then, when all concerned utilize this informative classification with identical criteria and base lines, they will become aware of the actual causes of death in the various age and weight groups against which pre-

ventive measures are needed in their areas and may then logically and successfully apply them. Furthermore, these similar data from states and local areas can then be combined so that a mass of statistically significant data will be available for analysis by everyone concerned.

The majority of all natal day deaths occur in smaller infants weighing less than 1,500 gm. (3 lb. 5 oz.) at birth. It is important here to stress that in our classification prematurity per se was not considered to be an actual cause of death because, in the light of present knowledge, prematurity is only a measure of the length of uterogestation.

All infants prematurely born, irrespective of weight, account for only 8.1% of all the live births, but they account for 79.1% of all the natal day deaths. However, lower weight infants (under 1,500 gm. at birth) comprise only 1.3% of all live births, but comprise 60.1% of all the natal day deaths. Moreover, among these premature infants of lower weight, 704.0 died during the first year for every thousand born. Conversely, heavier weight infants (2,000 to 2,500 gm.) comprise 5.4% of all the live births, but they comprise only 7.4% of all the natal day deaths. Moreover, among the premature infants of heavier weight, only 53.4 died for every thousand born.

would have been only 8.6% of all nonwhite births. I believe that this figure of 8.6% is a truer representation of the frequency of premature births among the nonwhite than is the figure 12.7%.

When regulations [6] for the control of maternity divisions and newborn nurseries covering policies, personnel, procedures, and equipment were first formulated in 1937, the same type of intensive, continuous care was required for all premature infants irrespective of whether the infant was large or small and the strict requirements of these regulations were aggressively enforced. As a result, the efforts of trained scientific personnel were unnecessarily scattered over too wide a range, providing special care for many infants who did not need it to the neglect of such care for the lower weight group where it was desperately needed. It is those smaller infants who accounted for 60.1% of the natal day mortality and 53.2% of the tridiem mortality.

CAUSES OF DEATH IN THE EARLY AGE AND LOW WEIGHT GROUPS

There are seven major anatomic causes of death in the neonatal period, according to our classification, namely: (1) abnormal pulmonary ventilation, (2) injuries at birth, (3) malformations, (4) infections, (5) blood dyscrasias, (6) anoxia, and (7) miscellaneous causes. Our recent study showed that abnormal pulmonary ventilation and injuries at birth alone account for 72.5% of all the infant deaths that occur during the first day of life, of which abnormal pulmonary ventilation causes 54.3% and injuries at birth cause 18.2%. These two causes are responsible for 83.5% of all the deaths on the first day in infants of low weight (under 1,500 gm.). It is on the basis of these facts about the frequency of these two main causes of early infant deaths that we predicate much of our action to reduce needless perinatal deaths. Abnormal pulmonary ventilation includes all those infants who, on satisfactory postmortem examination, show no specific pathological lesions except those that may be in the lungs. In many instances, the deaths from abnormal pulmonary ventilation are due to the anatomic condition known as abnormal pulmonary ventilation with hyaline-like membrane and resorption atelectasis. In some instances, the deaths are due to extreme immaturity of the lungs. Occasionally, no cause could be demonstrated other than varying degrees of atelectasis (respiratory distress), in

TABLE 2.—*Anatomic Causes of Infant Deaths in Chicago 1936-1949*

Condition	Percentage of Total No. of Infants Who Died at Various Ages by Cause									
	Under 1 Day	Under 3 Days	1 to 3 Days	Under 1 Week	3 to 7 Days	8 to 29 Days	3 to 29 Days	1 to 29 Days	Under 30 Days	1 to 11 Months
Abnormal pulmonary ventilation	54.3	50.2	50.6	47.5	28.2	16.3	22.4	21.4	43.7	6.8
Injuries at birth	18.2	18.8	19.1	18.3	13.3	4.4	9.3	9.3	16.6	1.3
Malformation	12.0	12.5	12.1	13.5	22.4	32.1	26.9	19.8	15.8	19.7
Infections	6.2	8.7	8.4	10.0	20.5	38.3	28.8	35.7	13.4	55.6
Blood dyscrasias	3.9	4.7	4.7	5.5	10.4	3.9	7.2	4.3	5.3	0.9
Anoxia	4.7	4.4	4.4	4.2	2.9	0.9	2.0	1.6	3.8	0.0
Miscellaneous	0.7	0.7	0.7	1.0	2.3	4.3	3.4	7.8	1.4	15.7

In the past much effort and personnel has been led in the wrong direction because of the misleading term premature, just as up to the present the term neonatal has been misleading. When all premature infants are subdivided into a number of significant weight groups, instead of being classified in just one weight group (5 lb. 8 oz. and under) as required by definition (World Health Organization), efforts at controlling mortality among them can be more efficiently applied because of the following proved facts: 1. Deaths in smaller premature infants often result from different causes than deaths in larger premature infants. 2. Specialized care immediately after birth is required for the smaller premature infant, while relatively little care is required for larger premature infants. 3. Nonwhite infants between 2,350 and 2,500 gm., who make up 12% of all premature infants, must be classified as premature infants on the basis of the definition of prematurity by weight alone (5 lb. 8 oz. and under). In reality, on the basis of ossification centers [4] and other grounds, they are physiologically full term and are not regarded as premature by many authorities.[5] In Chicago, in 1952, 12.7% of all nonwhite infants were premature, while only 6.7% of all white infants were premature. If nonwhite infants with a birth weight between 2,350 and 2,500 gm. were not considered to be premature, nonwhite premature births

4. Taback, M.: Birth Weight and Length of Gestation with Relation to Prematurity, J. A. M. A. **146**:897-901 (July 7) 1931.

5. Eastman, N. J.: Prematurity from the Viewpoint of the Obstetrician, Am. Pract. **1**:343-352 (March) 1947.

6. The Joint Maternal Welfare Committee of Cook County aided in the formulation of the regulations.

which deaths could be accounted for only on the basis of inadequate functioning of the lungs.[7]

The category "injuries at birth" includes mainly those infants who die from intracranial hemorrhages. Nineteen per cent of the deaths in the first three days of life are due to injuries at birth. Our study revealed that a total of 56.7% of the neonatal deaths due to injuries at birth in Chicago were infants that were premature, and the majority of these occurred on the first day of life. We also found that the method of delivery is by far the most important of all the factors related to these deaths. Hence, it is evident that the most skilful type of obstetrics in delivery of the premature infant is needed to help reduce the number of deaths in these infants from intracranial hemorrhage.

In the established classification of causes of death, which is set up by the World Health Organization and followed by the National Office of Vital Statistics, based only on the statement of the cause as shown on the death certificate, most deaths in premature infants are grouped together regardless of the weight of the infants and the

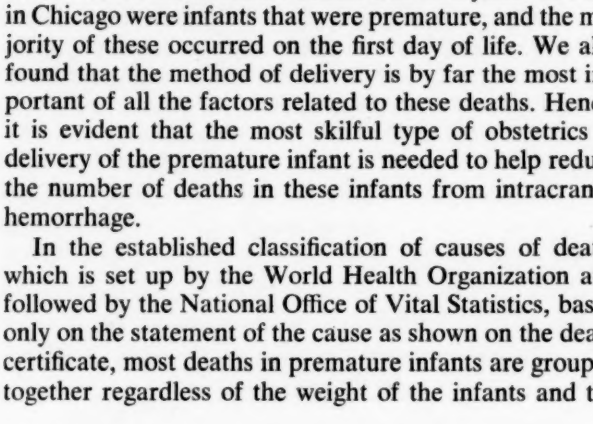


Fig. 2.—Percentage distribution of three main causes of death among infants by age at death, in Chicago, 1936-1949. With increasing age during the first year, deaths from abnormal pulmonary ventilation and injuries at birth decreased proportionately and infections increased, so that for the period 1 to 11 months more than half of the deaths were due to infection and only a small portion due to injuries at birth and abnormal pulmonary ventilation.

true anatomic cause of death. They are erroneously charged to prematurity, although the actual cause of death is not prematurity per se but rather abnormal pulmonary ventilation or injuries at birth. Prematurity is a measure of gestation, although by definition (World Health Organization) it is a weight (5 lb. 8 oz. and under). On the basis of our postmortem examinations, we do not believe that prematurity can be classified as a cause of death.

To group all premature deaths together is just as illogical as it would be to group together all deaths during the neonatal period and erroneously charge them to a useless definition such as "neonatality," which literally means dying of "young age," just as we now say persons die of old age. Rightly, we charge these neonatal deaths to the specific conditions causing them, such as infections or malformations. Yet, officially[8] we are required to group together all deaths in premature infants and erroneously charge them to a definition or a word "prematurity" instead of to such actual causes of death as abnormal pulmonary ventilation or injuries at birth.

With good obstetric and pediatric care, many premature infants who die could live. But when deaths are erroneously charged to prematurity, many may exert all their efforts in the prevention of prematurity with too little consideration of the painstaking care that the obstetrician must utilize in delivery of these infants and the special pediatric care required immediately after birth. These deaths in premature infants depend, in many cases, on lack of the best possible obstetric (prenatal and natal) and pediatric (postnatal) care on the part of everyone concerned, the mother herself, the physician, the hospital administrator, and the health officer.

It must be borne in mind that, in the light of present knowledge, little is known about preventing prematurity in many cases, although there is much that the good obstetrician can do in this regard if the available knowledge were utilized. In the more informative classification used by us, deaths in premature infants are charged to the specific condition causing the death, such as respiratory distress, injury at birth, or infection. Guided by our classification, it is possible to better determine the kind of preventive measures that physicians, hospital administrators, nurses, and all others responsible for the care of these infants should utilize. This is not possible with the misleading classification of the National Office of Vital Statistics, which all state health officers and many others, including us, are required to use.

RESPONSIBILITY

From our past failures, we now realize that the health officer's function in reducing the number of early deaths in infants is to devise control measures that will be thoroughly, constantly, and specifically directed at improvement in the prenatal care of the mother and in the perinatal care of the mother and her infant. Our analysis of 10,000 neonatal deaths has demonstrated that, of the many prenatal and perinatal factors that have an effect on mortality rates of the first 3 days, five have a most profound influence. Two of these, socioeconomic status and the toxemias of pregnancy, are subject to prenatal control; the other three, method of delivery, anesthesia, and the type of care the infant receives, are subject to perinatal control. It is self-evident that efforts to control perinatal mortality must be applied mainly in the hospitals, because the great majority of infants are born in hospitals (96% in Chicago and 85% of the 3,900,000 births in the United States). Furthermore, of the deaths that occur during the first week (63% of all infant deaths in Chicago), the overwhelming majority (96%) occur before the newborn infants ever leave the hospital.

Our regulations for maternity divisions and newborn and premature nurseries were formulated for the purpose of improving the quality of these hospital services. We believe that the unsatisfactory conditions that have been

7. Potter, E. L.: Pathology of the Fetus and the Newborn, Chicago, Year Book Publishers, Inc., Chicago, 1951, pp. 249-252.

8. Sixth Revision of the International Cause of Death Code of the World Health Organization. Vol. 1 and 2, World Health Organization, Columbia University Press, New York, 1948.

found to exist in certain institutions with unnecessarily high death rates occurred because our regulations were not constructed so as to assure constant and consistent optimal care for mothers and their infants, and because we failed to enforce to the letter the regulations that we had. Our regulations were not formulated to differentiate between the care required for the lower weight and heavier weight infants. They did not take into account the need for the highest quality of administrative leadership on which depends the efficient functioning of all personnel in the maternity division and newborn nurseries. Because we failed to enforce the regulations that we already had in many important aspects, several unsatisfactory events resulted.

Policies and procedures in some hospitals were established on paper only and were not carried out, thus misleading the hospital administrator, physicians, nurses, and the health officer. Delivery of complicated cases was often entrusted to physicians not equipped to carry them out satisfactorily. The care of newborn and premature infants was all too often left to unqualified scientific personnel, and consultation was not immediately called when needed for desperately ill infants. Anesthetics were often administered by unqualified personnel, particularly at night, on Sundays and holidays, and in emergencies. Deaths actually resulted from improper administration of the wrong anesthetics. Many hospitals failed to meet the minimum requirements for adequate care and essential facilities; there was a shortage of medical and nursing personnel; and there was a lack of well-formulated policies. Faulty procedures in the labor and delivery room and newborn and premature nurseries at times existed to the degree of constituting real hazards to parturient mothers and infants. There was often a lack of sufficient space for maternity and nursery activities. There was a lack of joint free and frank discussions among all groups of personnel connected with the prenatal and parturient aspects of the care of the mother and the postnatal care of the infant. There was a lack of liaison among all those interested in the problem of providing adequate care for the mother and her newborn infant, including physicians, nurses, nutritionists, social workers, and the health officer.

The health officer who by ordinance is entrusted with the licensing and control of hospitals has the opportunity as well as the responsibility of making sure that all available knowledge and skill are utilized in the care of mothers and infants in these institutions. He can aid the hospital administrator in making sure that hospitals have available at a moment's notice all the essentials for providing proper care, including established policies, adequate personnal, proper procedures, and sufficient paraphernalia (equipment).

Through the establishment of an evaluation and rating system similar to those that have been utilized successfully in the control of dairies and restaurants, the health officer can help keep the hospital administrator informed of the exact conditions in his institution. We have found that with such a system, and with adequate well-trained inspection personnel, it is possible to determine closely in what respects each institution is deficient and actually to evaluate a hospital on its degree of compliance with the regulations. Even more important, with this system, it is possible to determine the quality of service the hospital is rendering to mothers and infants and many of the reasons why many infants died. When deficiencies are noted in a hospital, the health officer, by consultation with the hospital administrator and the chiefs of the obstetric, pediatric, and nursing staffs, can, as a rule, aid them in bringing about the necessary corrections. In the evaluation and rating system that we employ, the greatest weight is given to the quality of the personnel. Experience has shown that in those institutions where scientific personnel are well trained, are thoroughly skilled in what constitutes optimal care of the mother and her infant, and, above all, are imbued with an innate enthusiasm about the job they are doing mortality is at the lowest obtainable level. And conversely, in institutions where these conditions do not exist, where personnel is lackadaisical and more interested in extraneous activities than in providing optimal service, mortality does not decline but continues to ascend.

The health officer, in cooperation with the physician and the hospital administrator, by doing his full duty, can bring about improvement in policies, personnel, procedures, and facilities. He can do this primarily by aiming his efforts at making sure that leadership in the hospital as a whole and in each section of the maternity division is forceful, energetic, and endowed with a determination to make inroads on the number of needless deaths in the institution. Ultimately, it will be discovered that the type of care furnished by the hospital depends on top level administrative, obstetric, pediatric, and nursing leadership. When leadership is efficient, the hospital administrator, the physician, and nurses jointly assure that the training of all personnel is adequate and that they will continue to carry out their tasks without interruption. On this top level leadership also depends whether or not faulty procedures will be tolerated or obviated.

It is reliably estimated that some 85% of mothers deliver their infants normally without complications, but when complications occur requiring operative delivery, skilful technique is a requisite if the hazards to the infant are to be reduced to the minimum. Equally important is the knowledge of understanding what not to do, as well as what to do, for unnecessary interference in the birth processes, either by medication, operation, or anesthesia, often results in the loss of infant lives. Hence, "the desirable attendent for a pregnant woman is a physician adequately trained and experienced in obstetrics and, above all, so aware of his limitations, that, when emergencies arise which are beyond his competence, he will not delay in securing help." [9] The health officer, with the aid of the conscientious hospital administrator, can require proper organization of the maternity division of each hospital, so that well-qualified consultants are always available and are called when needed.

The chances of survival of any infant, especially the premature one, are reduced by the use of any type of analgesia and anesthesia during labor and delivery. The health officer has a responsibility in seeing that well-qualified anesthesiologists, who are trained and have been passed by the obstetric staff, are always available and supervise the administration of every anesthetic.

9. Gladston, I.: Maternal Deaths—The Ways to Prevention, New York, Commonwealth Fund, 1937.

IMPROVEMENT OF PRENATAL CARE

Improvement of prenatal care should lead to reduced mortality in infants in the early age and low weight groups, while inadequate prenatal care tends to increase this mortality. Hence, it is the health officer's duty to cooperate with the physician in assuring that every pregnant woman has the advantage of continuous care of the best quality throughout pregnancy.

Toxemia is amenable to control through provision of adequate prenatal care, since, if the woman with toxemia is discovered early by her physician and he administers proper treatment, in many cases the disorder may be alleviated. It is also believed by many that, with proper diet and care during pregnancy, the development of toxemia may be prevented.

Lack of adequate, early, and continuous prenatal care leads to a high incidence of premature births, particularly among those of lower socioeconomic status. Lack of an adequate diet with all of the essential proteins, vitamins, and minerals, particularly iron, to prevent anemia, are believed by many to play a most important role in these cases. When prenatal care is completely adequate it decreases the chances of premature birth in many cases and helps avoid the complications of pregnancy, labor, and delivery, thus reducing the hazards to the newborn infant. Even the best possible hospital equipment and delivery care may not be able to counterbalance the ill-effects of faulty prenatal care.

Unhygienic conditions often prevail in the homes of those of lower socioeconomic status. Furthermore, the mothers from such homes may be shiftless in their attitude toward securing adequate prenatal care. It is the health officer's duty to attempt to overcome these effects of lower socioeconomic status by encouraging the personnel entrusted with the care of these women to more thoroughly and meticulously guide them through the critical periods of pregnancy, labor, and delivery. This can be accomplished more satisfactorily when all interested agencies, including physicians, nurses, and social agencies, cooperate with the health officer. The undoubted effect of low socioeconomic status in producing high mortality in newborn infants can, in part at least, be obviated by such proper corrective action in providing adequate prenatal care.

Such corrective action involves getting the pregnant woman to the physician early. This can be done, first by making pregnancy reportable by code number, the physician being the only one having the person's name and address, and secondly, by following up each known case of pregnancy just as we follow up all contacts to contagious diseases, all infants and young children who have not been given protective inoculations against diphtheria and whooping cough, and all contacts to venereal infection. This involves, as an emergency measure, assigning our health department forces, nurses, physicians, and all other available personnel, into areas of low socioeconomic status, and literally by a door-to-door campaign, making sure that every known pregnant woman is receiving the type of care she merits just as we used a successful case-finding, case-holding program in our campaign against venereal diseases. When the quality of prenatal care is optimal, deaths early in infancy will decline.

Such a program of assuring adequate prenatal care for all pregnant women can also be made a part of a community premature prevention program, because the first step in the prevention of prematurity is to make sure that the pregnant woman goes to the physician early and continuously and receives an adequate diet, including supplemental vitamins and minerals, as well as hormones, if indicated. It will give the physician a better chance to utilize every known available means at his command to help prevent premature birth.

Immediate skilful care is provided in all cases in the city-wide premature care program such as we established in 1935, based on the plan of Dr. Julius Hess. Such a program requires that every hospital have nurses especially trained to give instant, constant, and continuous care to the small premature infant, have all of the equipment necessary to provide proper care, and have established proper procedures to give adequate obstetric care to the mother. Skilful delivery of the premature infant may aid in reducing the hazard of intracranial hemorrhage, which is so often responsible for a fatal outcome and for crippling in those that live.

A capable attendant and necessary equipment in the delivery room when a premature birth is expected is a necessity if mortality among these infants is to be reduced materially. The attendant's activities must start instantaneously after delivery to clear the infant's airways, simultaneously keeping the infant warm and in an atmosphere with sufficient oxygen and humidity. Once respiration has been established the premature infant must be promptly and properly transported to the premature nursery, where care by skilful physicians and nurses is required.

SUMMARY AND CONCLUSIONS

Deaths on the natal day are the long-neglected field of infant mortality. As a result, in the last 40 years there has been practically no reduction in the death rate of the natal day period, so that now the deaths of this period make up more than one-third of all of the infant deaths. This condition presents an alarming situation, since many needless deaths continue to occur even though much new information is appearing in the medical literature concerning the reasons for and ways of preventing them. Furthermore, utilization of all previously available acceptable information would aid in materially reducing these deaths.

I have stressed the areas that have been neglected and, at times, may have appeared to belittle the physicians' efforts and those of the hospitals and health department; however, it is by no means my purpose to give the impression that the hospitals in Chicago do not come up to the standards of those in all other parts of the United States. I have not particularly called attention to many of the things that we did to attain the enviable position of having the lowest average infant mortality rate for the 10 year period from 1940 to 1949 of any of the 10 largest cities in the United States.

Nevertheless, there is still much to be accomplished in reducing needless infant deaths, but it requires action to make any appreciable further reduction in mortality. Most effort must be concentrated on the first three days

of life and on infants of low weight who die mainly from abnormal pulmonary ventilation and injuries at birth. Deaths in these age, weight, and cause groups are, as yet, far from being under satisfactory control.

As a result of careful analyses of the causes of death and the factors contributing to them, we have inevitably arrived at the conclusion that concentration of effort is required, with complete cooperation of the patient, in improving prenatal care of women of low socioeconomic status and in constantly providing for skilful natal care of the mother-to-be in the hospital by obstetricians and optimal postnatal care of the infant by pediatricians. Our failures in the past have resulted because we have not constantly and consistently provided for this type of prenatal, natal, and postnatal care.

We have now set up a program that we believe will lead to the correction of the deficiencies of the maternity services in hospitals and will enable us to make sure that every pregnant woman receives adequate care from early in pregnancy until termination of delivery, and that the infant also will be given optimal care. More detailed and complete reports of the work of the Chicago Health Department in the control of early neonatal mortality are available in reprints which can be obtained from the author.

7410 Oglesby Ave.

ROLE OF THE PEDIATRICIAN IN PREVENTION OF NEEDLESS NEONATAL DEATHS

Stewart H. Clifford, M.D., Brookline, Mass.

The pediatrician responsible for the newborn in an obstetric hospital has three major obligations. First, he must apply all available knowledge to the protection and care of his charges so that they may survive the hazards of this dangerous period of life without future handicaps. Secondly, he must strive, with the help of all allied disciplines, to extend the boundaries of present knowledge to the end that fetal and neonatal morbidity and mortality can be reduced. Thirdly, he must disseminate this special knowledge through every available medium so that babies everywhere may benefit.

A revision of the American Academy of Pediatrics' manual "Standards and Recommendations for Hospital Care of Newborn Infants—Full Term and Premature" is about to be published [1] and should be made the bible of the newborn service. This manual contains standards that must be met by every hospital, irrespective of size or resources, attempting to care for newborn infants. A strict adherence to the spirit and letter of this manual by every nursery in the country would bring a reduction in needless neonatal deaths more surely than any other step that could be taken. It is obvious that the pediatrician in charge of a newborn service must assume the personal responsibility of making a critical survey of his local situation and insist that the medical service, nursing service, physical facilities, techniques of care, and record system fulfill at least the minimum requirements.

The Chicago study [2] demonstrates the need of a fresh approach to the problem of neonatal mortality. Prior to the study, Chicago's neonatal mortality had fallen from 36.1 in 1925 to 27.5 in 1935. From the start of the study in 1935 to 1940 neonatal mortality fell to 20.3 (a reduction of 26.2%), and from 1940 to 1950 the neonatal rate went to 19.4 deaths per 1,000 live births (a reduction of only 3.9%). A similar change was occurring in the United States as a whole; from 1935 the rate of 32.5 fell to an estimated 20.2 in 1951, a 37.8% reduction. The experience of many large obstetric hospitals proves that this general neonatal mortality of 19 to 20 per 1,000 live births does not represent an "irreducible minimum" but that existing knowledge and technique, if generally applied, could reduce this rate to 14 per 1,000 live births. With nearly 4 million births in the United States this would mean a salvage of 20,000 babies a year.

Prematurity, per se, is no longer acceptable as a cause of death. Premature infants die of the same conditions and causes that kill full term infants. It is true that premature infants are especially vulnerable; although they represent only 7 or 8% of all births, they contribute 60% of the total neonatal mortality. The distribution of the causes of neonatal deaths, as reported in the Chicago study, is quite representative of the experience encountered in other parts of the country: 47.5% postnatal asphyxia and atelectasis, 16.6% injury at birth, 15.8% congenital malformations, 13.4% infections, 5.3% blood dyscrasias, and 1.4% miscellaneous.

POSTNATAL ASPHYXIA AND ATELECTASIS

The pediatrician is seldom called on to take an active part in resuscitation of the newborn. This phase has usually been completed before the baby is turned over to the pediatrician for care. This does not prevent the pediatrician from having definite ideas as to the current errors being practiced in the resuscitation process. Those old enough to remember and young enough not to have forgotten will recall that in the pre-analgesia-anesthesia days of home delivery the need to resuscitate the product of a normal pregnancy and delivery was a rare occurrence. Most of these babies cried lustily as they crossed the perineum. The same type of patient, when transferred to a hospital for delivery and given analgesia and anesthesia, produced sleepy babies, 5 to 10% of whom were so slow in breathing and crying that resuscitation was deemed advisable. There is no argument that in either the pre-

Assistant Clinical Professor of Pediatrics, Harvard Medical School; Visiting Pediatrician, Boston Lying-in Hospital; and Chief of Premature Service, Children's Medical Center of Boston.

Read in the Symposium on Prevention of Needless Neonatal Deaths before the Section on Pediatrics at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

1. American Academy of Pediatrics: Standards and Recommendations for the Hospital Care of Newborn Infants—Full Term and Premature, to be published.

2. Bundesen, H. N., and others: The Prevention of Needless Neonatal Deaths, reprinted from the annual report of the Chicago Health Department, Chicago, 1951.

analgesia or the postanalgesia era, some infants, the products of abnormal factors during pregnancy or labor, did, and do, require artificial resuscitation. In these infants the outcome has more to do with the preexisting damage at birth than with the type of resuscitation elected. The apprehension of the pediatrician concerns the "slow babies," who are given medication and who, if treated conservatively, will survive with no ill-effect, but who, if considered to be in much danger and only salvageable by heroic methods of resuscitation, may suffer more damage from the well-meaning manipulations of unskilled resuscitations than if left discretely alone.

In his efforts to do good the physician must not do harm. I am particularly alarmed at descriptions [3] that would lead any resident to assume he could pass a bronchoscope under direct laryngoscopy in a newborn, a procedure the most skillful laryngologists avoid unless there are very specific indications. Those with large experience in performing autopsies on the newborn have not encountered laryngeal or bronchial plugging that could possibly have been relieved by direct suction. One physician informed me that he would never use his laryngoscope unless the situation were desperate (with the infant in the third or flaccid stage of asphyxia) and then not to aspirate but to introduce oxygen directly into the trachea.

The emphasis and reliance on mechanical resuscitation gadgets, be they laryngoscopes, air locks, or rocking beds, in my opinion does more harm than good. In my experience positive pressure methods of resuscitation are frequently associated with the production of emphysema and pneumothorax. Emphasis should be concentrated on correcting, before and during delivery, the problems that may cause asphyxia at birth. The Boston Lying-in Hospital is as anxious as any to save more infants' lives, but very conservative methods of resuscitation have been used. In the past five years in 23,967 live births there have been 337 neonatal deaths, a rate of 14 per 1,000 live births. Our policy is to continue our present conservative methods until another procedure has demonstrated better results. Bloxsom's [4] neonatal mortality before using his air lock was 25 per 1,000 live births, and after a similar period during which he used the air lock his neonatal rate was 19 per 1,000 live births; compared to our own results it suggests that an approach to lowering the death rate might be better based on obstetric factors rather than on mechanical methods of resuscitation.

It may take several hours for the full-blown picture of severe respiratory distress to develop in the newborn infant. All infants should be watched closely, and at the first sign of possible respiratory trouble treatment should be instituted. There are certain situations wherein this syndrome is prone to develop in the newborn: after cesarean section, after a difficult delivery, in cases of intrauterine anoxia, and in cases in which the infants were delivered of diabetic mother or prematurely (here treatment should be instituted at birth). The air passages should be cleared of fluid by postural drainage and gentle suction. The stomach should be aspirated of its fluid content. The infant should be placed in an atmosphere of 40 to 50% oxygen. Although its value has not been proved, present practice is to provide high humidity through water fog or mist added to the atmosphere of the incubator, with or without a wetting agent. As infections are apt to develop in these infants, it is good practice to give prophylactic broad spectrum antibiotics or a combination of antibiotic therapy and chemotherapy that affects both gram-positive and gram-negative organisms.

Fortunately, although these infants are seriously ill, the vast majority recover completely on or about the fourth day. Since this condition is of such short duration during which time the babies are often comatose, the giving of food or fluid orally may be disastrous through further aspiration. The infants are frequently edematous and require no extra fluid; if, however, the clinical condition demands it, fluids can best be administered by hypodermoclysis.

A frequent and preventable cause of death in otherwise normal full term and premature infants is the regurgitation and aspiration of stomach contents. This accident occurs later in the neonatal period. A tragic outcome can be prevented only by constant observation and immediate treatment by postural drainage and suction. The aspiration episode may be considered serious enough to warrant prophylactic treatment to prevent secondary infection in the lung. The risk of aspiration is one reason the propping of formula bottles is frowned on and why rooming-in is usually delayed 24 to 48 hours, or until the mother has recovered from the effects of her delivery.

INJURY AT BIRTH

Intracranial hemorrhage, the result of birth trauma, has practically disappeared from modern obstetric hospitals. If more than a rare instance occurs it is an indication that methods of obstetric management should be made the subject of critical review. Spontaneous intraventricular hemorrhages still occur in premature infants, especially very immature ones. No methods are known at present to prevent this condition. The condition is characterized by the relatively late appearance of central nervous symptoms. The prognosis is bad. On rare occasions reduction of intracranial pressure and drainage of the old blood by lumbar and intraventricular punctures may produce a successful outcome.

Subarachnoid hemorrhages are usually the result of intrauterine anoxia. Advocates for and against treatment by repeated drainage by lumbar puncture will be found. It is our policy to perform frequent lumbar punctures and continue treatments until the fluid is normal. I think more infants recover and do so without hydrocephalus developing, than if expectant treatment is performed. Subdural hematomas are not infrequent in the newborn period, and it is very important in preventing later complications to make the diagnosis early. The symptoms may be convulsions, increased anterior fontanel pressure, lethargy, vomiting, failure to gain weight, and rapid increase in head size. The diagnosis is made by subdural punctures in conjunction with lumbar puncture. The treatment is repeated tapping and probably exploration and removal of part of the membrane. All suspected cases should have neurosurgical consultations.

3. Beattie, J. L., and Zwerling, M. H.: Resuscitation of the Asphyxiated Newborn Infant, J. A. M. A. **152**: 216-221 (May 16) 1953.

4. Bloxsom, A.: Asphyxia Neonatorum: New Method of Resuscitation, J. A. M. A. **146**: 1120-1124 (July 21) 1951.

CONGENITAL MALFORMATIONS

Infants with tracheoesophageal fistula are noted to pass excessive amounts of mucus from the moment of birth. This is enough on which to suspect the diagnosis, and by passing a catheter and finding that it ends in a blind esophageal pouch the diagnosis can be made. Early diagnosis and surgery have converted this once fatal anomaly into one with a good prognosis.

Obstruction of the second portion of the duodenum is intrinsic or secondary to malrotation of the cecum. The diagnosis is suspected when the newborn vomits persistently from birth. A flat x-ray plate of the abdomen without the need of a contrasting meal will show the large dilated stomach and first portion of the duodenum. Immediate surgery converts this once fatal condition into one with a good prognosis.

In slightly over one-half of the infants with prolonged obstructive jaundice [5] the cause is congenital atresia of the bile duct. In about one-quarter of the cases it is the result of inspissated bile secondary to erythroblastosis. In the remaining one-fourth it is the result of inspissated bile of unknown etiology and probably includes many cases of viral or infectious hepatitis. The establishing of an accurate diagnosis is very important in these patients, for in the inspissated bile group expectant and supportive medical treatment is accompanied by spontaneous recovery in all cases secondary to erythroblastosis and in 80% of the unknown etiology group. On the other hand, in congenital atresia of the bile ducts the defect could be corrected surgically in only 20% of the cases, and the operative mortality in the repaired cases was 80%.

It is imperative that those infants who have a condition from which they will recover spontaneously not be exposed to the possibility of operative death caused by surgical exploration. For this reason many physicians advise a two month waiting period in all infants with jaundice before surgical exploration is attempted. On the other hand, Gellis believes that true atresia can be disgnosed if a sufficient number of laboratory studies have proved that no bile is coming through the liver into the intestine. If no urobilinogen is appearing in the urine and if the bilirubin trend is generally upward. then surgical exploration should be carried out with no further delay.

INFECTIONS

It has been the general contention that the death of any infant from infection, after having survived the first week of life in good condition, must be considered a preventable death until proved otherwise. Epidemic diarrhea of the newborn is an example of one highly fatal condition that can be either prevented or controlled by the strict practice of approved nursery technique. The premature infants, owing to their natural susceptibility and to their prolonged hospital stay, are particularly prone to infection. This is especially true in nurseries where premature infants are admitted after being born outside. We have had an actual demonstration in the premature nursery of the Children's Hospital of how the needless loss of life from late infection can be brought under control. All of the premature infants cared for in this nursery were delivered outside our hospital and admitted for care and treatment. Between 1944 and 1947 there were 508 premature infants admitted, with a mortality of 50% (see table). Thirty-two per cent of the deaths took place after 1 week of age, and autopsy showed 85% of these deaths due to infection.

A program attempting to control this late infection problem was completed in late 1947. This plan included: (1) reconstruction of the nursery, isolating it and protecting it from contact with the rest of the hospital by as many barriers as possible, (2) terminal sterilization of all formulas and fluid for oral administration either by flowing steam or by steam under pressure, (3) a nursing and medical staff who dealt exclusively with the premature infants, (4) individual isolation of each infant from admission until ready for discharge, in an Isolette, and (5) prophylactic administration of 50,000 units of aqueous penicillin intramuscularly every six or eight hours and 20 to 30 mg. per kilogram of body weight of sodium sulfadiazine per 24 hours intramuscularly for 7 to 10 days. This procedure was carried out in all infants over 3 days of age and to all at any age whose history or examination caused one to even suspect contact with infection or possible injury or abnormality. The results of this program were dramatic and appeared at once. With 444 admissions between 1948 and 1952, the overall mortality fell to 34% and the per cent of those infants dying after 1 week of age fell from 32% to 8% (see table).

Mortality of Premature Infants in the Children's Hospital Nursery Before and After the Activation of a Program to Combat Infection

Age at Death (Days)	1944-1947 (%)	1948-1952 (%)
0- 7	68	92
8-21	13	4
22-35	12	1
36 +	7	3
Total admissions	508	444
Mortality	50%	34%

There is an increasing concern about deaths from infection occurring in the first hours or days after birth. These infections must be acquired in utero or during the birth process. In some cases it is suspected that premature rupture of membranes, vaginal examinations stripping of the membranes, or operative manipulations may introduce the infection. In others maternal disease may be the cause; however, in many no likely etiological factor can be discovered.

Of the 58 premature infant deaths that took place at the Boston Lying-in Hospital during the 12 months of 1952 only one death took place after the first week of life. Six of the premature deaths occurring in the first seven days of life were due to infection (10%). Four of these infants had bronchopneumonia and died at the ages of 1¾ hours, 4 hours, 40 hours, and 43 hours, respectively. One died at 40 hours with omphalitis. One died at five days with purulent Escherichia coli meningitis and septicemia. Of the 22 full term infant deaths, 3 were due to infection. Two of these infants died at 3 days of age, one with E. coli bronchopneumonia, and

5. Hsia, D. Y. Y., and others: Prolonged Obstructive Jaundice in Infancy, A. M. A. Am. J. Dis. Child. **84**: 470-472 (Oct.) 1952; Prolonged Obstructive Jaundice in Infancy: General Survey of 156 Cases, Pediatrics **10**: 243-251, 1952.

the other with E. coli septicemia. The third died at 48 hours with early bronchopneumonia. It is clear that the pediatrician must obtain a very careful history of possible infection in the mother during late pregnancy and labor and be prepared to institute prophylactic therapy in appropriate circumstances.

BLOOD DYSCRASIAS

Hemorrhagic disease of the newborn was once a popular and common diagnosis, but it is now of rare occurrence. It is now realized that this is not a true disease but a syndrome that can be due to many causes. As these causes, such as erythroblastosis, sepsis, anoxia, and trauma, are recognized the bleeding is ascribed to its etiological cause and no longer referred to as hemorrhagic disease. A small residue of cases remain that appear to be caused by a true defect in the blood coagulation system such as congenital absence of fibrinogen. Such infants require careful study and supportive transfusions. The relation of vitamin K and abnormal prothrombin time to bleeding in the newborn is still not established. The rare bleeding referred to occurs with or without vitamin K having been administered to the mother and infant. There is need for a carefully controlled study to settle this relationship. Until such clarification is forthcoming, the point of wisdom would appear to be to continue administration of vitamin K to the mother before delivery and to the infant at birth.

Recent controlled studies [6] have proved the value of exchange transfusions in treating hemolytic disease of the newborn (erythroblastosis fetalis) as compared with single or multiple small transfusions. With exchange transfusions the mortality was 13%, whereas in matched cases treated by single transfusion it was 37%. These studies further demonstrated that the induction of labor three to five weeks before expected delivery in Rh-negative women resulted in a lower survival rate than when labor was allowed to proceed spontaneously.

Exchange transfusions have been shown to prevent the occurrence of kernicterus.[7] A microdetermination has been developed whereby bilirubin determinations can be performed on capillary blood. A correlation exists between the height of the bilirubin level and the occurrence of kernicterus. The bilirubin may act merely as an indicator of some other unknown substance responsible for the toxic damage to the brain. The bilirubin level rises very rapidly in the first few days of life in infants with hemolytic disease. Exchange transfusions, repeated if necessary, can lower the bilirubin level, and when this level has been kept below 20 mg. per 100 ml. kernicterus has not developed.

SUMMARY AND CONCLUSIONS

The present general neonatal mortality is between 19 and 20 per 1,000 live births. Many large obstetric hospitals in this country have demonstrated that existing knowledge and methods can lower this rate to at least 14 per 1,000 live births. The various causes of neonatal deaths are reported, and methods by which this loss can be prevented or minimized are discussed. In every instance in which methods to prevent needless loss of newborn infants are considered one immediately encounters the importance of the human factor. Reduction in neonatal mortality cannot be legislated; only through the enlightened cooperation of the many interested disciplines will real progress be made.

1101 Beacon St.

6. Mollison, P. L., and Walker, W.: Controlled Trials of Treatment of Haemolytic Disease of Newborn, Lancet **1**: 429-433, 1952.

7. Hsia, D. Y. Y.; Allen, F. H., Jr.; Diamond, L. K., and Gellis, S. S.: Erythroblastosis Fetalis: Serum Bilirubin, A. M. A. Am. J. Dis. Child. **84**: 640-642 (Nov.) 1952; Erythroblastosis Fetalis: Studies of Serum Bilirubin in Relation to Kernicterus, New England J. Med. **247**: 668-671, 1952.

HOSPITALS AND PREVENTION OF NEONATAL MORTALITY

Charles U. Letourneau, M.D., Chicago

Survival of the newborn is a matter of national importance. The discrepancy between our birth rate and that of some other nations makes it so. It is imperative that we make every effort to compensate for our low birth rate by keeping infant mortality at a minimum. Studies conducted by public health workers, research undertaken by physicians, new concepts in nursing techniques, and improvement in the design, equipment, and personnel of hospitals have all helped to prevent neonatal mortality, but much remains to be done. It has been said [1] that improved hospital care alone can reduce the annual death rate among premature infants by 20,000. This is a challenge that must be and has been accepted by hospitals.

Read in the Symposium on Prevention of Needless Neonatal Deaths before the Section on Pediatrics at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

1. Daily, E. F.: What Hospitals Can Do About the High Premature Infant Mortality Rate, Hospitals **25**: 41 (Aug.) 1951.

2. The Joint Commission on Accreditation of Hospitals Bulletin, vol. 1 (Nov) 1952.

As community organizations, hospitals must bear a fair share of the task of prevention of neonatal deaths. Theoretically, hospitals provide the facilities to assist physicians and nurses in practicing their arts to the best advantage. Actually, hospitals are required to do much more than that. As educational institutions, they are active partners of the public health system in educating the people to better standards of health. They do this by participating actively in integrated public health programs. They cooperate closely with the medical, nursing, and paramedical professions in teaching and research. They also maintain their services at the highest peak of efficiency so that the quality of medical care rendered by physicians and nurses within their confines may also be of the best. With the medical profession, hospitals have voluntarily embarked on a program of self-accreditation [2] with the object of improving hospital care throughout the nation.

In the specific area of hospital care of the newborn, hospitals are working closely with the specialities of

obstetrics and pediatrics in an attempt to set minimum standards that will assure adequate care of the newborn and prevention of neonatal mortality. A measure designed to prevent prematurity, for example, is the scrutiny of the rate of cesarean sections in the hospitals. If the cesarean section rate exceeds 5% of the total births in the hospital, the medical staff of that hospital is urged to investigate its obstetric practices. In the areas of public health education, prenatal care, and obstetric and pediatric practice, hospitals can and do render much assistance to the medical and nursing professions.

The prime responsibility of the hospitals, however, begins with the birth of the infant and continues through the stay of the infant in the hospital until it is discharged. The not very profound observation has been made that the better the care in the hospital, the lower will be the mortality among newborn infants. The tremendous resources now available in the medical, nursing, public health, and hospital fields today make this statement axiomatic.

HOSPITAL PERSONNEL

The hospital contribution to the problem of prevention of neonatal mortality depends to a large extent on the trustees and the administrators of each hospital. Unless these persons are interested, the vast store of scientific knowledge concerning the newborn may be wasted or remain unused. Initially, the greatest attribute that a hospital administrator can possess is a strong desire to do something about the problem of neonatal mortality. Next to this, he must have the ability to stimulate others to want to do something about it too. As coordinator of the efforts of professional, technical, and paramedical staff in his hospital, he can be a powerful inspiration to them in achieving the desired goal. But his zeal must extend beyond the personnel of his own hospital and must reach the interest of the medical and nursing professions, the public health workers, and the people of his community. This is much to expect of a hospital administrator, but, if he has the "will to care," the task is half accomplished. Although he may not know very much about the problem in the beginning, the resourceful hospital administrator takes measures to obtain the knowledge, the facilities, and the equipment needed to achieve a good program of neonatal care.

As a first step, the hospital administrator must provide personnel, accommodation, and facilities to assist the medical staff of the hospital in giving proper care to the patients. He seeks to attract the best qualified physicians to his hospital and to his community, so that the hospital facilities can be used to best advantage. To meet this particular problem, he will invite competent obstetricians and pediatricians to practice in his hospital. There may be limitations, however, to his opportunity of obtaining the best men in the field. His hospital may not be large enough to support the most competent specialists, and his community may not be extensive enough to give them the scope their specialties demand.

Failure to secure certified specialists, however, need not dismay the enterprising hospital director. A hospital is only obliged to render the best service that it can with the staff and the facilities at hand. He will try to interest a good general practitioner in the problem of newborn care and encourage him to acquire more specialized knowledge on the subject. One enthusiastic general practitioner in a community can make a greater contribution toward improving the care of the newborn than a dozen uninterested specialists.

Although he may not be competent to pass judgment on the quality of medical practice in the hospital, the hospital administrator can still contribute to better care by calling attention to national standards established for the care of the newborn by such bodies as the American Academy of Pediatrics.[3] Administrative insistence on minimum standards in the hospital should not be resented by the medical staff or construed as lay interference in medical practice, for the hospital administrator has a duty to insist. Everyone is presumed to be interested in reducing mortality, and, if recommendations of national, public-spirited organizations are to be of any value at the local level, they must be put into effect.

NURSING CARE

Almost as important as the medical care is the quality of nursing care of newborn infants in the hospital. The nursing care of the newborn is now recognized as a specialized art that requires much knowledge and experience. As in the medical specialties, the highest quality of nursing care may be restricted by a lack of qualified personnel and for the same economic reasons. Once again, the "will to care" is the greatest single factor in good nursing care of the newborn. An interested general duty nurse should be found and stimulated to acquire more knowledge about neonatal care. If facilities for training nurses in the care of the newborn are available nearby, the resourceful hospital administrator will arrange to have interested members of his nursing staff instructed there. If adequate facilities for such training are not readily available, the hospital may set aside a sum of money provided by the trustees or by the women's auxiliary of the hospital for training nurses at a larger hospital in which acceptable procedures are in use. When the volunteer nurse has learned the techniques, she can teach others. In this way, a reasonably good nursing staff to care for the newborn can be assured, even to a small hospital of limited means.

LOCAL ASSISTANCE

The smart hospital administrator takes advantage of all local assistance facilities to secure better care for his patients. The care of the newborn is no exception to this principle. The health departments of the municipality, region, or state in which the hospital is located may have much to offer in the way of advice, personal consulting service, or even financing. The administrator will certainly enlist the help of the local medical and nursing societies, voluntary organizations, social agencies, and hospital associations to advance his purpose. In the United States, sources of available help are almost unlimited if hospitals will take the trouble to look for them.

Many government authorities have enacted special laws for the hospital care of the newborn. These laws are a welcome aid to raising the standards of medical and nursing practice in hospitals. In some cases, however, they do not go far enough; they are minimum only. Hos-

3. American Academy of Pediatrics: Standards and Recommendations for Hospital Care of Newborn Infants: 1953 Revision, to be published.

pital administration has the duty to see that the laws are complied with, but no hospital should be satisfied with minimum standards. It should strive to give the best. Thus, regulations for the management of newborn nurseries should be enacted within each hospital, and, in preparing such regulations, the responsibility falls squarely on the medical and nursing personnel of the hospital. In this situation the hospital administrator provides the staff work for writing regulations but should insist at least on the minimum standards recommended by the national bodies even in the face of opposition or apathy.

WHAT MUST BE PROVIDED

On the material side, the hospital administrator is responsibile for providing adequate accommodations for the newborn. This involves planning for square footage, air space, air conditioning, and other items of adequate design and construction. Equipment must be procured, such as incubators, resuscitation apparatus, oxygen, and similar items that are necessary to the proper care of the newborn. The administrator must maintain, as well as provide, in good working order the accommodations and equipment so that the tiny patients can obtain the maximum benefits from the facilities that have been provided.

In planning facilities and selecting equipment, the hospital administrator leans heavily on the medical staff. Nevertheless, he is not without resources, even in the absence of such advice, for the architectural and functional layout of the nursery has been standardized to some extent by the United States Public Health Service,[4] and the minimum requirements have been laid down. In the same way, the American Hospital Association conducts a continuous program of research on ways and means of improving service in the nursery. To give some examples, the association is presently inquiring into the efficiency of incubators and is following with keen interest the reports of research that is presently being conducted on the cause of retrolental fibroplasia. The solution to this problem might involve a completely new approach to the care of the premature infant in the nursery with consequent changes in design and modification of equipment presently in use. In the last analysis, however, it is the medical staff or the pediatric staff, if there is one, that has the main responsibility of giving proper advice as to whether the layout in the hospital is satisfactory or not.

ASPECTS OF CARE

The various procedures carried on in the nursery for the newborn are also a concern of the hospital administrator. The preparation of the formulas, for example, involves many administrative services. A special room must be set aside; techniques must be established and maintained; and the ingredients must be mixed and delivered to the small patients at the right time, at the right temperature, and by the right person. The drugs and the materials for the treatments prescribed must also be provided by the hospital and must be of the highest quality.

Having procured the personnel, the accommodations, the equipment, the supplies, and the administrative services, the responsibility of the hospital administrator is not nearly ended. By means of a system of reporting and recording, he must be in a position to evaluate the services rendered by his hospital and by the physicians who practice in it. Possibilities of improvement in the service must be quickly called to the attention of the medical and the nursing staff. It is standard practice, therefore, to alert the hospital administrator as soon as a case of diarrhea is discovered in the nursery. He must mobilize all his resources to isolate the patient and to prevent further spread to other patients. An epidemic of this disease is a black mark against the hospital. He may also have to do a lot of explaining to the health department.

The hospital administrator is as much concerned with the mortality and morbidity of the newborn in his hospital as are the physicians and nurses on his staff. A poor record is not only a reflection on the quality of medical and nursing practice in the hospital but also a reflection on the quality of his administration. From the standpoints of both public and personal interest, the hospital administrator must do everything in his power to reduce mortality in the newborn in his hospital.

FINANCE

Needless to say, a good program to prevent neonatal mortality involves finance. The care of the newborn, and especially that of the premature infant, is a costly undertaking. Ways and means must be found to finance the program, and this falls within the domain of the administrator. The burden of paying for this service should fall primarily on those who use them, namely, the parents of the young patient. Unfortunately, since most parents are in the low-income, younger-age group, they are seldom able to pay the full cost of maintaining such a program. Some insurance plans have been persuaded to underwrite the full cost of patient stay in the newborn nursery, but these are few. In some states and municipalities, funds are available to assist in maintaining a neonatal program. In some hospitals, the unpaid balance is distributed throughout other departments in the hospital by means of an accounting device. This sometimes involves raising room rent for adult patients or adding a little more to the charges for roentgenograms or laboratory procedures. Some hospitals feel that this practice is justifiable in the public interest. In other hospitals, the trustees have set aside special funds for the purpose of making up the deficit between what the patient can pay and the actual cost of maintenance. Such funds may come from endowments or public subscription.

It cannot be denied that the saving of a newborn baby is a worthy cause with a tremendous public appeal. This aspect of the problem is not overlooked by the competent hospital administrator. Having organized a woman's auxiliary in his hospital, he should experience little difficulty in financing a program of this kind. He "never underestimates the power of a woman," and a prompt and enthusiastic response usually attends any appeal to help save infant lives whether the request be for a new piece of equipment or funds to train nurses in the care of the newborn or merely to make up the deficit in the nursery service. The public relations resources of the hospital are easily available to promote a campaign to

4. Elements of the General Hospital: Revised Edition, Hospitals **26**: 109, (April) 1952.

remodel or rebuild a nursery, and the judicious approach to the community has rarely failed to produce results for such a worthy cause.

SUMMARY AND CONCLUSIONS

The hospital administrator can do much to prevent or reduce neonatal mortality on his own initiative, but lacking the precise professional and technical knowledge, he requires the assistance and advice of his physicians and nurses without whom he can achieve a minimum success only. Separately, all the interested parties, physicians, specialists, nurses, public health workers, and hospitals, have achieved a marked degree of success in lowering mortality in the newborn. It is of relatively recent date that a common, cooperative approach to the problem has been undertaken by all these groups acting collectively and together. There seems to be no limit to what can be accomplished in this field if all will contribute their knowledge, experience, interest, enthusiasm, and "will to care" to the common enterprise.

18 E. Division St. (11).

CLINICAL NOTES

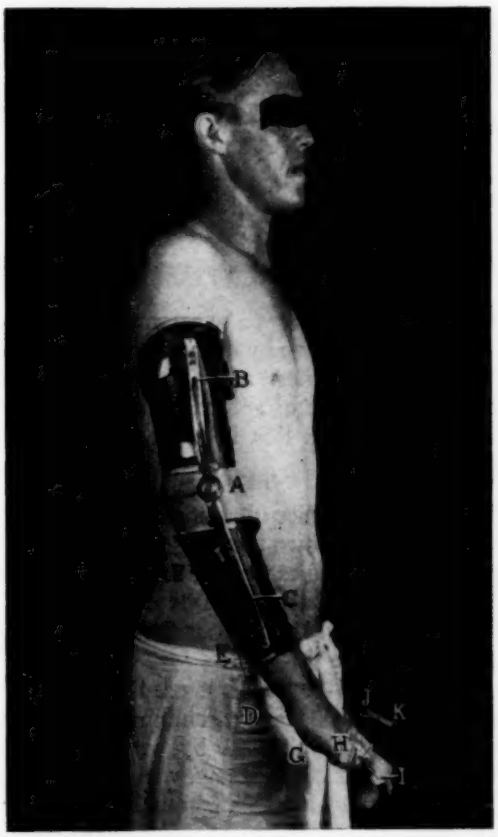
CORRECTIVE BRACE FOR THE UPPER EXTREMITY IN HEMIPLEGIA

Louis N. Rudin, M.D.
Daniel J. Cronin
and
John S. Croucher, Fort Howard (Baltimore), Md.

In the first few days after the occurrence of hemiplegia, the affected upper extremity is limp and appears flaccid, but actually, the muscles are spastic. After a variable short time a typical position is assumed. The upper extremity is adducted, the elbow flexed, the forearm pronated, and the wrist, fingers, and thumb flexed. If physical therapy and rehabilitation measures are not begun early, permanent contractures of muscles develop, and the upper extremity becomes fixed in the position described. There is a slow improvement in the brain tissue because of a partial resolution of the lesion. This results in improvement in the potential motor ability of the cortex. Unfortunately, this organic improvement of brain tissue cannot be translated into purposeful volitional movements, because the muscles and joints of the upper extremity have been fixed by contractures.

Many patients with hemiplegia of long duration have an increased potential ability to execute volitional movements of the paralyzed upper extremity, provided the muscles and joints are not fixed in a contracted state and allow for a range of motion. Heat and passive stretching, both manual and with pulleys, can be used to overcome these contractures. Since treatment is usually given only once daily in the average office or clinic, progress of the patient is extremely slow.

A special upper extremity brace has been developed to overcome the contractures as quickly as possible. The main feature of the brace is a series of springs that act at the elbow, wrist, fingers, and thumb in a direction opposite to that of the contractures. The constant tension produced by these springs gradually overcomes the contractures. The brace is taken off for physical therapy and is put back for its tension effects between treatments. It can be used for overcoming flexion contractures of the upper extremity from any cause.



A steel spring, *A*, is attached to the brace at posts *B* and *C*. The spring produces tension in the direction shown by the arrow, forcing extension of the elbow joint. The wrist is extended by a curved steel spring, *D*, attached to the bands of the forearm section of the brace at *E* and *F* and to the palmar pad, *G*, of the "reverse knuckle bender" (Bunnell, S.: Surgery of the Hand, ed. 2, Philadelphia, J. B. Lippincott Co., 1948, p. 137, fig. 96, Q). The "reverse knuckle bender," *H*, *I*, is tensed by rubber bands, *J*, *K*, producing extension at the metacarpophalangeal and interphalangeal joints. Rubber bands are attached to a thumb cuff and to a spring steel wire riveted to the radial side of the forearm cuffs, producing abduction of the thumb.

Pulley exercises are used to overcome the abduction contractures at the shoulder joint. A pulley is fixed to the ceiling or the upper part of a door jamb, and a loop is made in one end of the pulley rope to suspend the affected hand. The other end of the rope is passed through the pulley, and a series of knots for proper gripping is made at about three inch intervals. The patient grasps the rope with his unaffected hand and produces active assistive and passive motion in a seesaw manner to the involved upper extremity.

Chief, Physical Medicine Rehabilitation Service (Dr. Rudin), Supervisor, Orthopedic Brace Shop (Mr. Cronin), and Assistant Supervisor, Orthopedic Brace Shop (Mr. Croucher), Veterans Administration Hospital, Fort Howard.

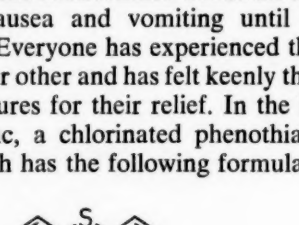
This report is published with permission of the Chief Medical Director, Department of Medicine and Surgery, Veterans Administration, who assumes no responsibility for the opinions expressed or conclusions drawn by the authors.

NEW ANTIEMETIC DRUG

PRELIMINARY REPORT

Dale G. Friend, M.D.
and
James F. Cummins, M.D., Boston

Nausea and vomiting constitute a symptom complex as distressing and almost as common as pain. It is surprising how little had been learned about the mechanism and control of nausea and vomiting until comparatively recent times. Everyone has experienced these symptoms at some time or other and has felt keenly the lack of really efficient measures for their relief. In the laboratories of Rhône-Poulenc, a chlorinated phenothiazine was synthesized, which has the following formula:



10-(γ-dimethylaminopropyl)-2-chlorophenothiazine hydrochloride.

This substance, which will be referred to as compound 2601-A, was soon shown by French investigators to have several unique properties,[1] among which is the ability to block the emetic effect of apomorphine in animals. This immediately suggested that it might be a highly useful antiemetic drug.

METHOD

After thorough studies in animals and a limited number of patients had shown the drug to be without observable toxic effects,[2] studies were initiated at the Peter Bent Brigham Hospital to determine its effectiveness against a variety of agents and conditions that cause nausea and vomiting in patients.

Compound 2601-A was first used cautiously in patients in the terminal stage of carcinoma and uremia, each condition being complicated by serious nausea and vomiting. A dose of 25 or 50 mg. was given intramuscularly initially and again at four hour intervals, for three or four days, if necessary, to control the symptoms. Usually the initial dose arrested the vomiting, and the remaining doses could be given orally. The usual dose for oral use was 25 mg. given three or four times a day. In some patients, a dose of 50 mg. given three or four times a day was employed, but results were so satisfactory with the 25 mg. dose that it was seldom necessary to use the higher one.

RESULTS

To date, 70 patients have been studied, with gratifying results. The table shows the effect of the drug on nausea and vomiting caused by a variety of conditions and drugs.

Without doubt, compound 2601-A has a powerful selective effect against nausea and vomiting and is effective whether given orally or intramuscularly. It acts in almost all patients without producing any degree of sedation or other evidence of action on the central nervous system. It is much more effective than diphenhydramine, tripelennamine, or dimenhydrinate as an antiemetic, since it promptly proved effective in patients in whom vomiting had not been relieved by these drugs.

Nausea and vomiting ceased usually within one hour after injection or oral administration of compound 2601-A. Often patients who had been unable to take anything by mouth for days were able to eat their next meal. In one patient with nausea and vomiting of three days' duration, secondary to toxic labyrinthitis, the vomiting immediately cleared, but the dizziness remained; the patient was, however, able to enjoy his meals. Another patient who had nausea, vomiting, and hiccuping of 10 days' duration, secondary to uremia, was relieved of gastrointestional symptoms, but the hiccups remained unabated.

Effect of Compound 2601-A on Nausea and Vomiting

Cause of Nausea and Vomiting	Result of Use of Compound 2601-A
Diseases	
Carcinomatosis	Controlled
Labyrinthitis	Controlled
Lymphomatosis	Controlled
Psychological vomiting	Decreased
Uremia	Controlled
Vomiting of pregnancy	Controlled
Drugs	
Disulfiram (Antabuse) plus alcohol	Prevented
Folic acid antagonist	Stopped promptly
Aureomycin	Stopped promptly
Codeine	Stopped promptly
Meperidine	Stopped promptly
Methadone	Stopped promptly
Morphine	Stopped promptly
Nitrogen mustard	Helped prevent
Oxytetracycline (Terramycin)	Stopped promptly
Protoveratrine	Stopped promptly
Urethane	Stopped promptly

A series of 35 patients who were under the influence of alcohol were given 1.5 gm. of disulfiram (Antabuse) and 150 to 175 mg. of compound 2601-A over 48 hours, a regimen suggested by the observations of Martensen-Larsen,[3] who found diphenhydramine (Benadryl), sodium chloride, and disulfiram an effective combination in the treatment of such patients. After the disulfiram-compound 2601-A treatment, no nausea or vomiting developed, and the patients rapidly recovered from their alcoholic state with a minimum of undesirable residual effects. Often, they promptly went to sleep and awakened sober and relaxed. They were able to return to their employment much more promptly than was possible after use of any of the other well-recognized methods of relieving alcoholism. In a few patients who had nausea and

From the Medical Service of the Peter Bent Brigham Hospital and the Department of Medicine, Harvard Medical School, Boston.

Senior Associate in Medicine, Peter Bent Brigham Hospital, and Associate in Medicine, Harvard Medical School (Dr. Friend); Assistant in Medicine, Peter Bent Brigham Hospital, and Research Fellow in Medicine, Harvard Medical School (Dr. Cummins).

This study was supported by a grant from Smith, Kline & French Laboratories, Philadelphia.

The drug used in this study (compound 2601-A) was supplied by Smith, Kline & French Laboratories, Philadelphia. It was originally developed by the Rhône-Poulenc Special Research Laboratories in France under the generic name chlorpromazine (4560 R.P.).

1. Courvoiser, S., and others: Propriétés pharmacodynamiques du chlorhydrate de chloro-3 (dimethylamino 3' propyl)-10 phenothiazine (R.P.4560): Etude experimentale d'un nouveau corps utilisé dans l'anesthésie potentialisée et dans l'hibération artificielle, unpublished data, 1952. Laborit, H.; Huguenard, P., and Alluaume, R.: Un nouveau stabilisateur végétatif (LE 4560 RP), Presse méd. **60**:206-208, 1952. Courvoiser, S., and Ducrot, R.: Arch internat. pharmacodyn., to be published.

2. Smith, Kline & French Laboratories, Philadelphia: Personal communication to the authors.

3. Martensen-Larsen, O.: Erfahrungen bei der Behandlung des Alkoholismus mit Antabus, Die therapiewoche (No. 3, 1951/52) December, 1951.

vomiting from the disulfiram-alcohol reaction, compound 2601-A promptly suppressed the nausea and vomiting.

Nausea and vomiting due to medication with aureomycin, oxytetracycline (Terramycin), protoveratrine, or narcotic analgesics were also promptly controlled. Some patients receiving nitrogen mustard therapy were protected from the usually attendant nausea and vomiting if compound 2601-A was given. No change was made in the methods of administration of the nitrogen mustards; sedation was administered as usual, and the mustards were given in divided doses. If 75 mg. of compound 2601-A was given in three divided doses within a 12 hour period prior to intravenous administration of nitrogen mustards and for a similar period after such therapy, the nausea and vomiting was prevented or greatly ameliorated.

SIDE-EFFECTS

Dryness of the mouth and mild sedation developed in a few patients. In three, after a dose of 50 mg. of the drug had been given, transient faintness, flushing of the face, and palpitation developed. One of these patients was an 80-year-old, severely asthmatic patient, in whom, incidentally, the asthma cleared for several hours. Occasionally, a patient experienced some slight pain and tenderness at the site of intramuscular injection. Careful clinical and laboratory studies, including electrocardiograms, hematological surveys, and urinalyses, of patients who received compound 2601-A in a dose of 25 mg. three or four times a day for three months have shown no indication of untoward effects. The following case reports illustrate the use of this drug in various conditions.

REPORT OF CASES

Case 1.—A 35-year-old woman entered Peter Bent Brigham Hospital with disseminated lupus erythematosus of 5 years duration and chronic renal insufficiency, an elevated blood urea nitrogen level (220 mg. per 100 cc.), and severe hypertension. Nausea and vomiting developed, possibly because of the severe uremia. The patient was given 50 mg. of compound 2601-A intramuscularly on Dec. 23, and 100 mg. in divided doses on Dec. 25, with complete clearing of the nausea and vomiting. The patient ate her meals for the first time in a week and felt much better after the use of the drug. No toxic side-effects were observed, despite the severe renal damage and damage to other organs brought about by the disease. As long as the patient has received the drug, nausea and vomiting have remained suppressed. If a placebo was substituted, they returned within about 48 hours. This patient has been maintained on 25 mg. three times a day for almost three months.

Case 2.—In October, 1952, a 53-year-old man was found to have peritoneal lymphomatosis. At that time he was given radiation therapy and did well. In early December, more radiation therapy was required, and subsequent to this nausea and vomiting developed. At first they were controlled by the use of dimenhydrinate, but later this drug seemed to make them worse. The patient continued to vomit yellowish fluid three to five times a day and grew progressively weaker and more fatigued. On Dec. 27, compound 2601-A therapy was started with a dose of 25 mg. three times a day. On the first day, the patient received the drug at 10 a. m., 3 p. m. and 9 p. m. On Dec. 28, he was doing well. There was no nausea nor vomiting, and he tolerated a soft diet. Compound 2601-A was then given in doses of 25 mg. one hour before meals. On Jan. 1, the patient was tolerating food remarkably well; on that day, he was given 12.2 mg. of nitrogen mustard intravenously, and on Jan. 2 this dose was repeated. During this time compound 2601-A was being administered continually in a dose of 25 mg. three times a day. On Jan. 4, it was reported that the patient was eating better and had no pain; despite having received two courses of nitrogen mustard, he apparently was able to tolerate food well.

Case 3.—A 72-year-old man entered the hospital with carcinoma of the prostate, chronic low abdominal pain, loss of weight, and fever of several weeks' duration. A previous trial of penicillin therapy had resulted in penicillin sensitivity, and, as a consequence, aureomycin was given in the hope that the fever could be brought under control. With a dose of 2 gm. a day of aureomycin, severe nausea and vomiting developed, which seriously incapacitated the patient. This continued despite withdrawal of the drug, and the patient was given compound 2601-A, 50 mg. intramuscularly and then 25 mg. orally four times a day for the next two days. Four hours after he received the intramuscular injection, all nausea and vomiting disappeared, and the patient fell asleep. It was noted that he appeared drowsy and tended to sleep more than normally. This was thought to be a result of relief from the severe nausea, vomiting, and retching that had been experienced for the previous 48 hours. The next morning the patient ate the most food he had taken in days, and he has since shown steady improvement in appetite.

Case 4.—A 60-year-old white man, chronically alcoholic, who had been taking disulfiram for 19 months, stopped taking the drug and again began to drink. He had been on a drinking spree for about one week and had consumed large quantities of alcohol when he was given 1.5 gm. of disulfiram over a 24 hour period by his wife. When he was first seen a moderately severe disulfiram-alcohol reaction had developed. He was flushed and had tachycardia, with a heart rate of 130 beats per minute. He was not hypotensive but was nauseated and was vomiting vigorously. One hundred milligrams of compound 2601-A was given intramuscularly. The nausea and vomiting promptly stopped, and within 24 hours the patient could tolerate bland foods. He made quick and uneventful recovery from this reaction.

Case 5.—A 34-year-old housewife entered the hospital because of severe anuria from lower nephron nephrosis. When she was 22 weeks pregnant, the placental membrane had ruptured spontaneously, and two days later she had delivered a macerated fetus. Vaginal crepitus was noted at that time. Within two days marked bronzing of the skin had developed. The hematocrit had dropped from 36 to 10% Hemoglobinuria and finally complete urinary shutdown had developed. Laboratory studies showed a blood urea nitrogen level of 200 mg. per 100 cc., a carbon dioxide combining power of 15 mm. per liter, and a serum chloride level of 114 mEq. per liter. Clostridium perfringens was cultured from a blood specimen. For six days prior to admission, the patient had had persistent and progressive nausea and vomiting. She was immediately given compound 2601-A intramuscularly, 50 mg. four times a day. After the initial injection, nausea and vomiting ceased. The next morning the patient's appetite returned, and she was willing to take food by mouth. Compound 2601-A therapy was stopped after 48 hours and she remained symptom-free for three days, when nausea and vomiting recurred. Again they were controlled with use of the compound.

SUMMARY

A new drug, 10-(γ-dimethylaminopropyl)-2-chlorophenothiazine hydrochloride (compound 2601-A) was shown to be effective in suppressing nausea and vomiting caused by a wide variety of clinical conditions, e. g., carcinomatosis, labyrinthitis, lymphomatosis, and uremia. It was also found effective in preventing or controlling the nausea and vomiting caused by disulfiram (Antabuse) administration to patients under the influence of alcohol and that produced by aureomycin, folic acid antagonist, codeine, meperidine, methadone, morphine, nitrogen mustard, protoveratrine, oxytetracycline (Terramycin), and urethane therapy. The only side-effects observed were dryness of the mouth, occasionally mild sedation, and rarely a mild transient attack of faintness, palpitation, and flushing of the face.

721 Huntington Ave. (15) (Dr. Friend).

SPECIAL ARTICLES

MEDICINE, WARFARE, AND HISTORY

John F. Fulton, M.D., New Haven, Conn.

It is not commonly realized that many of the most significant advances in medical science have been made by medical officers in the armed services or by civilian physicians working under the stimulus of wartime exigency. Whereas the ultimate compensations of war to any society are usually few and seldom recognized, in the field of medicine, over the years, they have been numerous and many of them highly important. A number of examples may be cited from the historical record.

In his illuminating series of notes on the history of military medicine, the late Col. Fielding H. Garrison [1] made the observation that, while there were military surgeons in ancient times who occupied positions of responsibility and respect in the armies of Greece and Rome, it was the Swiss Confederation, in the 14th century, that antedated all other nations of modern Europe in state care of the wounded. Municipal ordinances were issued notifying the individual soldier that his government was behind him and would look after his welfare on the field of battle. The eminent historian Conrad Brunner [2] points out further that, from the time of the battle of Laupen in 1339, the Swiss archives are replete with records of monies distributed for the care of the wounded and their dependents. Brunner also discovered that barber-surgeons were engaged by individual Cantons to attend the wounded after battle. The Swiss thus set an example to all of the other warring countries of western Europe.

In France in the 1470's we find that Charles the Bold, Duke of Burgundy, had placed a surgeon in each company of 100 lancers, that is, one surgeon to 800 men. It is also recorded that the lancers received £ 12 monthly from the Duke's coffers while his surgeon-physicians received only £ 5. When Edward IV of England joined Charles the Bold in the campaign against Louis XI, he brought with him a chief physician, two "body physicians," a surgeon, and 13 assistant barber-surgeons. These men, who attended the sick and wounded, gained valuable experience for dealing with civilian problems, injury, and disease when the wars had ended.

A century later we find Andreas Vesalius, founder of modern anatomy, serving as a military surgeon in the armies of Charles V. His contemporary, Ambroise Paré, who lived through the reigns of seven French monarchs and served four of them, not only introduced the ligature for arresting hemorrhage resulting from injury or amputation but also used antiseptic salves for dressing wounds. A man of high character, Paré spoke with authority and did more to place surgery on a modern basis, as Vesalius had anatomy, than any other person until the time of Joseph Lister. Paré was also a pioneer in advancing the art of rehabilitation of the injured. He devised many forms of prosthesis, including wooden arms, legs, mechanical fingers, false noses, and ears—advances that again were adopted by civilian surgeons.

During the 17th and first half of the 18th century, advancement of military medicine proceeded slowly, and there was no one comparable to Paré until the last half of the 18th century, when James Lind, the great British naval surgeon, appeared on the scene. There was, however, one notable figure in the 17th century, Richard Wiseman, who served the royalist armies in England throughout the civil war and after the Restoration and who was responsible for many improvements in surgical technique, including the art of amputation, especially in the case of gunshot wounds affecting the joints. His book, "Severall Chirurgicall Treatises," published in 1676,[3] is one of the important landmarks in the history of surgery, both military and civilian.

To James Lind, M.D. (1716-1794) (to be distinguished from James Lind, M.D. [1736-1812], also a Scotsman) of Edinburgh, a surgeon long in the service of the Royal Navy, we owe the first clear-cut proof that scurvy can be prevented by the use of citrus fruits among sailors on long ocean voyages. His "Treatise on the Scurvy," published in 1753,[4] is a classic, and as a result of it a dread disease, common not only among seamen but in civilian populations where citrus fruits are not readily available, has been virtually eradicated. Fully conscious of the importance of his discovery, Lind wrote in the preface to the first edition: "The subject of the following sheets is of great importance to this nation; the most powerful in her fleets, and the most flourishing in her commerce, of any in the world. Armies have been supposed to lose more of their men by sickness, than by the sword. But this observation has been much more verified in our fleets and squadrons; where the scurvy alone, during the last war [ending in 1748], proved a more destructive enemy, and cut off more valuable lives, than the united efforts of the French and Spanish arms."

WILLIAM BEAUMONT AND SILAS WEIR MITCHELL

In 1853 the American medical profession mourned the death of William Beaumont, U. S. Army surgeon, who, in addition to advancing the art of surgery in our armed forces, made a brilliant study of the processes involved in human digestion. When Beaumont was stationed at an isolated army barracks in northern Michigan, a French-Canadian courier, Alexis St. Martin, was accidentally shot through the stomach. Beaumont attended his wound with infinite care. When it healed it left a fistula that Beaumont looked on not as a mere wound but as a unique opportunity to inspect his patient's stomach mucosa by direct vision and to study the rate of digestion of individual foodstuffs through action of the gastric juices. He was also able to remove these digestive secretions and to study their action on food outside the body, a study that resulted in his celebrated monograph, "Ex-

Sterling Professor of the History of Medicine, Yale University.

1. Garrison, F. H.: Notes on the History of Military Medicine, Mil. Surgeon **50**: 1, 1922.

2. Brunner, C.: Die Verwundeten in den Kriegen der alten Eidgenossenschaft; Geschichte des Heeressanitätswesens und der Kriegschirurgie in den schweizerischen Landen bis zum Jahre 1798, Tübingen, H. Laupp, 1903.

3. Wiseman, R.: Severall Chirurgicall Treatises, London, Flesher and Macock, 1676.

4. Lind, J.: A Treatise of the Scurvy. In Three Parts. Containing an inquiry into the Nature, Causes, and Cure of that Disease; Together with a Critical and Chronological View of what has been published on the subject, Edinburgh, Sands, Murray & Cochran, 1753. Reprinted as Lind's Treatise on Scurvy, Stewart, C. P., and Guthrie, D., editors, Edinburgh, the University Press, 1953.

periments and Observations on the Gastric Juice, and the Physiology of Digestion," [5] which so well exemplified Pasteur's famous dictum, "In the field of observation, chance favours only the mind which is prepared."

The United States armed forces have had many other illustrious medical officers who have done original work through opportunity to study wounded men, ours as well as those of the enemy. Many names come to mind, such as that of John Shaw Billings; but no one during the Civil War occupies the position of Silas Weir Mitchell, a physiologist by training and a neurologist through special interest. Mitchell, with W. W. Keen (who ultimately became a celebrated Philadelphia surgeon) and G. R. Morehouse, early in the Civil War (1861) had occasion to study peripheral nerve injuries and the sensory and motor disturbances that result therefrom. Perusal of the protocols of their preliminary Circular Letter issued through the Office of the Surgeon General on March 10, 1864,[6] and of the monograph that they published later in the same year,[7] makes it clear that Mitchell was the dynamic force behind the study. His analysis of the problem illustrates his powers of observation and his genius for making sound physiological deductions. Among other things, Mitchell and his colleagues discovered that in certain cases following severance of an important nerve, especially when the nerve's disruption was associated with infection, there were abnormal sensory manifestations, i. e., hyperesthesia in the extremity affected, a syndrome that Mitchell named causalgia. The problem of causalgia has been studied for nearly a hundred years in both civilian and wartime cases of nerve injury, and it came to be most actively studied during World War II, when its incidence was frequent.

In retrospect, an even more important contribution of Mitchell and his collaborators lies in the clear-cut description of "primary" and "secondary" shock. Thus, in discussing the various types of shock, one reads in the circular on reflex paralysis: [6] "The majority of physicians will no doubt be disposed to attribute the chief share in the phenomena of shock . . . to the indirect influence exerted upon and through the heart. There are, however, certain facts, which duly considered, will, we think, lead us to suppose that in many cases the phenomena in question may be due to a temporary paralysis of the whole range of nerve centres, and that among these phenomena the cardiac feebleness may play a large part, and be itself induced by the state of the regulating nerve centres of the great circulatory organs. . . . But there do exist certain cases, more rare it is true, in which singular affections of the nerve centres, other than those of the heart, occurs as a consequence of wounds."

WORLD WAR I

During World War I there were many medical advances stimulated by the war itself, particularly in the sphere of prevention of infectious disease. It is said that when the Austrians attempted to invade the Balkans the front was held not by guns but by the louse and the devastating epidemics of typhus caused by the jumping creatures. It is estimated that nearly a million Austrian soldiers poised on the Balkan border perished from epidemic typhus. The Russian armies had much the same difficulty and so did those of other countries of western Europe. Our soldiers were similarly troubled in the trenches on the western front, but through use of hygienic methods there was far less devastation.

On the basis of the experience of World War I, every effort was made in World War II to protect our troops from typhus, especially in the Mediterranean theater. Meanwhile, DDT, the most effective insecticide then known, had been introduced and was used by the Eighth Army under the direction of General Fox and General Hume to delouse the population of Naples and other points of southern Italy. This practically abolished the typhus hazard among our occupation forces and the Italian civilians.

It would be difficult to enumerate all the special branches of medicine that have benefited by war research, but there is nothing so striking as the protection afforded our troops by mass inoculation, particularly against tetanus. To quote Brig. Gen. Elliott C. Cutler, chief consultant in surgery of the European theater of operations in World War II: "I would like to speak of the miracle which has occurred in eliminating tetanus from military surgery. Let me recall some figures for you. In our Civil War, the mortality rate was from 89 to 95 per cent. Shortly before World War I, under the benefit of antitoxin which was discovered and elaborated upon by the use of animals, the mortality rate had dropped to between 40 and 80 per cent. During World War I, large statistical evidence showed a mortality rate of 20 to 58 per cent; but, in this second World War, there were only 11 cases known to have occurred amongst 10,700,000 men. Of these 11 cases, 5 had been given toxoid and 6 had not. Moreover, in these 11 cases, there are records of only four deaths, two of which occurred in individuals who had received the basic series of toxoid but no booster dose, and two in individuals who had not received even the basic series. This is, in my mind, one of the great miracles of modern medicine. The basis of the establishment of a proper toxoid rests squarely upon animal investigation, and no greater debt could be acknowledged to our friends in the animal kingdom than this advance for the good of humanity." [8]

In World War I many other lessons were learned, particularly the importance of moving casualties rapidly from the front lines, before infection had set in. The mortality incidence from battle casualties was far less than in the Civil War or the Spanish-American War, but it was still high as compared with the mortality rate from casualties in World War II.

Harvey Cushing took the lead in dealing with head wounds, and, while he worked slowly, much to the consternation of other Allied surgeons, he took the rugged view that one wound well handled served a better purpose than a dozen hastily repaired wounds, since in nearly all

5. Beaumont, W.: Experiments and Observations on the Gastric Juice, and the Physiology of Digestion, Plattsburgh, F. P. Allen, 1833.

6. Mitchell, S. W.; Morehouse, G. R., and Keen, W. W., Jr.: Reflex Paralysis, the Result of Gunshot Wounds, Founded Chiefly upon Cases Observed in the United States General Hospital, Christian Street, Philadelphia, Circular No. 6, Surgeon-General's Office (March 10) 1864. [Reprinted, Yale Medical Library, New Haven, Conn., 1941.]

7. Mitchell, S. W.; Morehouse, G. R., and Keen, W. W., Jr.: Gunshot Wounds and Other Injuries of Nerves, Philadelphia, J. B. Lippincott and Co., 1864; see also: Fulton, J. F.: Neurology and War (VIIIth Weir Mitchell Oration), Trans. and Studies Coll. Physicians, Philadephia **8**: 157, 1940.

8. Cutler, E. C.: Military Surgery—United States Army—European Theater of Operations, 1944-1945 (Hunterian Lecture), Surg., Gynec. & Obst. **82**: 261 (March) 1946.

the latter cases the patients would die anyway. His paper published in the *British Journal of Surgery* in 1918 [9] is still a classic of wartime cranial surgery and has been widely quoted by Hugh Cairns, Eldridge Campbell, and others who dealt with battle casualties in World War II.

WORLD WAR II

Introduction of Antibiotics.—Between World War I and World War II there were many important contributions useful not only in time of war but for medical and civilian defense. Undoubtedly the most important were the developments in the field of the antibiotics. Much research had been done on them before 1939, but their introduction as therapeutic agents was greatly expedited by World War II. Sir Howard Florey and his resourceful team at Oxford were responsible for establishing the therapeutic potentialities of penicillin. They were the first to isolate it in pure form; they were also responsible for determining its effective dosage and for securing its large-scale commercial production. Several years ago when someone referred to penicillin as an outcome of wartime research Sir Howard protested, and his objections were well taken, for he had begun to work on the antibiotics in the early thirties; but it would have been many years before penicillin could have been made available in large quantities had it not been for the stimulus of war. The story of penicillin has been frequently told and need not be repeated here, particularly since Sir Howard and Lady Florey have recently published detailed monographs [10] in which the meaningful story of the antibiotics has been traced in detail.

Surgery has probably been more benefited by wartime research than any other branch of medicine. In World War I no surgeon would have dreamed of closing an infected wound, or even one that was potentially infected, without leaving a drain. Now, thanks to the use of chemotherapeutic agents such as the sulfonamides and penicillin, it is possible to close wounds of almost every description, even those of the abdomen, without drainage and without fear of subsequent complication from infection, provided all dead tissue has been carefully removed prior to the closure. So great at one time did confidence become in the effectiveness of the new chemotherapeutic agents that some of the younger surgeons grew careless and began closing badly contused wounds without "débridement," i. e., without careful removal of seriously damaged tissue. Such injured areas may be without circulation, and they therefore become the foci of serious infection, since the bloodstream is unable to carry antibacterial agents into such regions. Penicillin thus cannot be regarded as a substitute for good surgery but merely a highly important adjunct. These newer principles of traumatic surgery, as worked out in the war theaters, have had immediate application in all forms of civilian traumatic surgery, and they are rapidly being adopted in our surgical clinics, largely through the influence of the younger medical officers returning from active service.

A second important result of the use of penicillin and the sulfonamides has been the avoidance of unnecessary amputations and unnecessary removal of potentially viable tissue. With the greater confidence that these drugs are bringing to the surgeon he is able to operate much less radically. Formerly it was taught that all contused tissue should be removed from an injured area, but a contused muscle may still have an active circulation and therefore be capable of regaining its normal function. When the thigh muscle or the calf has been injured by a high-velocity missile, the muscle is generally contused over a large area and a surgeon of the old school would in most such instances amputate rather than risk secondary infection. During the last two years of World War II and during the Korean campaign countless extremities injured in this manner have been saved by combining penicillin therapy with conservative surgery. One of the burning arguments, however, that one still encounters in surgical amphitheaters turns on the criterion of tissue viability: how can a surgeon be certain that a contused muscle will recover its function? The old adage ran, "When in doubt, remove it"; a newer epigram might be, "If it bleeds, it can recover," and "When in doubt, leave it."

BLOOD FRACTIONATION

Surgery has also been influenced by wartime studies on human blood and the blood plasma fractions that have become available in pure form, again as a direct result of wartime medical research. At the beginning of the war, much effort was devoted to the preparation of blood fractions suitable for transfusion. Blood plasma (whole blood minus the red blood cells) was made available, but since many untoward reactions occurred from the transfusion of incompatible plasmas, and since under war conditions blood typing was often difficult or impossible, the plasma proteins were fractionated and the globulin fraction that carries the allergic potentialities of the blood was eliminated, leaving the albumins and fibrinogen. Albumin was then prepared in pure form and was thus made available for immediate transfusion without fear of complications.

It soon became obvious, and this should have been clear from our experience in World War I, that when men have sustained severe hemorrhage whole blood is needed for transfusion, not merely plasma or albumin, since many weeks are required for the body to regenerate its red blood cells. The British had attempted to collect and store whole blood in 1939, but their efforts were largely unsuccessful because of difficulties in preservation. In 1943 an effective preservative was developed by the U. S. National Research Council, and within a few months whole blood was being flown in enormous quantities to Europe as well as to all the outposts of our Pacific theater, as it is now being flown to Korea. So effective is this service that blood drawn on the west coast was delivered in refrigerated containers less than 48 hours later at points such as Leyte, and at the end of the war it was quickly reaching Seoul and other points in the Korean theater.

As a result of these investigations on blood and its fractions, the civilian surgeon has an imposing array of blood substitutes ready for his use at any time, and he is able to count on a supply of stored whole blood rather

9. Cushing, H.: A Study of a Series of Wounds Involving the Brain and Its Enveloping Structures, Brit. J. Surg. 5: 558 (April) 1918.

10. Florey, H. W.: Antibiotics: a Survey of Penicillin, Streptomycin and Other Antimicrobial Substances from Fungi, Actinomycetes, Bacteria, and Plants, London, G. Cumberlege, Oxford University Press, 2 v., 1949, and Florey, M. E.: The Clinical Application of Antibiotics: Penicillin, London, Oxford University Press, 1952.

than having to find a blood donor at the scene of an accident or at some outpost of civilization. He has also come to depend on two other significant blood fractions, namely, fibrin and thrombin, which, thanks to the work of Edwin Cohn, Franc Ingraham, and others, are available in pure form and in combination can be used to stop the most stubborn hemorrhage, e. g., bleeding from the brain substance or the liver, which is notoriously difficult to arrest. A more homely use of the fibrin-thrombin combination is for stopping a nosebleed or the hemorrhage that so often follows tooth extraction.

Important new branches of medicine, important to the armed forces and to civilians alike, have been created by wartime necessity. Although no word has yet been coined to cover the great new area of chemical applications in disease control, i. e., insect repellents, insecticides, and antimalarials, which are now numerous because of our attempts to make military operations possible in tropical regions, this special field presents itself as a new and discrete branch of medicine and should be so recognized. Just as Major Walter Reed and Gen. William C. Gorgas made possible the building of the Panama Canal through control of yellow fever, so the repellents (against insect and shark) and the new insecticides made possible operations in the South Pacific in World War II that otherwise would have been too costly to contemplate. Other new and significant branches that have developed are aviation and submarine medicine.

AVIATION MEDICINE

Oxygen Administration.—Progress in aviation, stimulated by developments in military aircraft, has led to many advances of outstanding value both for medical defense and for civilian aviation.[11] One of these is oxygen administration. During the First World War, few fighter planes could achieve altitudes greater than 18,000 ft., and the use of oxygen, except in unusual instances, was not deemed a prime military necessity; hence, such oxygen masks as there were were crude in design and wasteful from the point of view of oxygen supply. The need for oxygen masks was well known, however, from early balloon ascent, and particularly from the tragic Tissandier disaster, which occurred on April 15, 1875. Three men had ascended in a balloon to an altitude of 28,000 ft., and all three were overcome by altitude sickness before they could breathe the oxygen that they had on board. As a result, two of the balloonists, Crocé-Spinelli and Sivel, succumbed, and Tissandier alone of the three survived. The intrepid French experimenter, Paul Bert, established the fact in a home-made pressure chamber that it was not low pressure as such that had caused the death of the two balloonists but rather the low pressure of oxygen at 28,000 ft. Paul Bert exposed himself, along with a bird and a rat, to a pressure of 430 mm. Hg. The bird vomited and appeared quite sick, and at a slightly higher altitude the bird was close to death and the rat uneasy. At that point, Professor Bert became dizzy and his pulse had increased from 60 to 86. He then began to breathe oxygen, his dizziness disappeared, and his pulse within two minutes had dropped to 64, but it was still impossible for him to whistle. He continued his ascent to an altitude equivalent of 29,000 ft. (428 mm. Hg), at which time the bird was prostrate and a burning candle had turned very blue, with its flame almost extinguished.

This celebrated experiment made it quite clear that oxygen must be available if planes without pressure cabins were to ascend to altitudes above 18,000 ft. Further study carried out during World War II made it clear that vision, mental alertness, and the capacity to fly a plane with safety began to diminish at altitudes as low as 5,000 ft., this being particularly true of night vision. Hence, when military aircraft began to ascend to altitudes of 25,000 and 30,000 ft. and later to 40,000 and 50,000 ft.[12] the problem of oxygen supply became acute and all the problems worked out for military aircraft were immediately applicable to commercial planes carrying civilians. It has been said that the Battle of Britain was won with a few oxygen masks. In a literal sense this is perhaps true, because Hitler's military pilots, both fighters and bombers, began in the summer of 1940 to come in at altitude ceilings well above the tolerance of an ordinary flier and they had developed systems of oxygen supply that for a brief time were superior to those of British fighters. Thanks to the efforts of the Flying Personnel Research Committee and particularly to one of its members, Sir Brian Matthews, the British developed a successful oxygen mask and a system of supply that made it possible for British fighters to meet German raiders at their own altitude, and through this circumstance the Battle of Britain was won, virtually in a single day, September 15, 1940, when 186 German planes were shot down. The *Luftwaffe* quickly decided it could no longer stand this rate of attrition. The British were tireless in their efforts to improve their oxygen masks and modes of supply, and our own air forces profited immeasurably by British experience, which was made freely available to the U. S. Army and Navy Air Forces.

Pressure Cabin Aircraft.[13]—It early became obvious to some investigators, including Paul Bert, that, if the gondola of a high-altitude balloon were artificially pressurized, a balloon might ascend higher into the atmosphere without endangering life. But years passed, and it was not until 1933 that the National Geographic–U. S. Army stratosphere flight was able to make an ascent in a pressurized gondola with adequate pressure control. In this memorable ascent, Auguste Piccard achieved an altitude of 72,395 ft., the highest altitude yet attained by man.

The experience encouraged the U. S. Army Air Corps to think of pressurized combat aircraft, and to Harry G. Armstrong, now Surgeon General of the U. S. Army Air Forces, must be given credit for having, through a historic Air Corps technical report, outlined the physiological requirements of sealed high-altitude aircraft compartments. This was a starting point for developments of pressurized planes in this country, the first of which (the

11. Hoff, E. C., and Fulton, J. F.: A Bibliography of Aviation Medicine, Springfield, Ill., Charles C Thomas, Publisher, 1942. Hoff, P. M.; Hoff, E. C., and Fulton, J. F.: A Bibliography of Aviation Medicine: Supplement, Springfield, Ill., Charles C Thomas, Publisher, 1944. Fulton, J. F.; Hoff, P. M., and Perkins, H. T.: A Bibliography of Visual Literature, 1939-1944, Washington, D. C., 1945.

12. In the *Illustrated London News* for May 16, 1953, it is reported that on May 4 a new English turbo-jet bomber (Canberra type) reached an authenticated altitude of 63,668 ft., which stands as the altitude record for heavier-than-air machines under human control.

13. The material in this and the following section is based on: Fulton, J. F.: Aviation Medicine in Its Preventive Aspects: An Historical Survey (Heath Clark Lectures, 1947), London, Oxford University Press, 1948. National Research Council: Decompression Sickness, Caisson Sickness, Diver's and Flier's Bends, and Related Syndromes, Philadelphia, W. B. Saunders Company, 1951.

XC-35) was flown in April, 1937. In this development the United States was ahead of both Britain and Germany, and thanks to the enterprise of the Lockheed Aircraft Corporation finally succeeded in making their stratoliners (B-307) and Constellations effectively pressurized. After 1946 Constellations began to make regular transatlantic flights at altitudes ranging from 18,000 to 24,000 ft., while the pressure in the cabins was maintained at an average corresponding to 8,000 ft.

Technical difficulties in pressure cabin aircraft prove numerous, and for the most part they stem from man's physiological requirements, i. e., maintaining cabin pressure, and, of almost equal importance, adequate ventilation. The average air passenger, without lung or heart disease and under the age of 70, is quite comfortable at an altitude of 8,000 ft., even though at that height his night vision may be somewhat impaired. But ventilation of the fuselage presents a very real problem because of the accumulation of water vapor and carbon dioxide; also in hot weather body odors and fumes from aircraft instruments and engines demand rapid change of air at appropriate pressure. In a completely sealed cabin a change of air of 2 to 3 cubic feet per minute per person will keep the humidity and the carbon dioxide at a tolerable level, provided there are no exhaust fumes.[14] Leaks in the pressure cabin equipment are inevitable, however, and with further experience it became evident that a change of at least 12 cubic feet per minute per person would be essential for comfortable air travel. This involved installation of larger turbo-pressurizers and air coolers to make the pressurized air tolerable from a thermal standpoint. Through experience gained during World War II these difficulties have now been largely overcome, and essential equipment has now been installed in all long-range, high-flying, pressurized passenger aircraft.

Explosive Decompression.—An ever-present hazard in pressurized aircraft, both military and commercial, is that of sudden or explosive decompression. Pressurized aircraft, such as the Constellation, is stressed to withstand a pressure differential of 6.5 lb. per square inch. This would permit flight at 30,000 ft. with an internal pressure equivalent of 8,000 ft. If a large military aircraft, flying at 30,000 ft., were suddenly depressurized by enemy action, the pilot, if he had oxygen available, could carry on, but other crew and passengers without oxygen would retain useful consciousness for about two minutes. If no oxygen were available, crew and passengers would become unconscious within a matter of minutes and death might ensue within a period of 8 to 10 minutes. Hence, commercial planes, in which explosive decompression might occur as a result of the breaking of a window, failure of turbos, or explosion of an observation dome, are not permitted to fly above 22,000 to 24,000 ft., since a large plane cannot descend rapidly enough to insure consciousness of the occupants, especially of the crew.

With military planes, which ascend to much greater altitudes, the situation is even more critical. For example, if pressurized military aircraft were flying at 52,000 ft. and were suddenly decompressed, the pilot would have only 15 to 20 seconds to get himself out of the plane, and, if he did not descend within three to five minutes through free fall to 20,000 ft., his heart would have stopped. A direct pressure dive might enable the pilot to achieve 15,000-20,000 ft., but he would be unconscious when he reached that level. In view of this circumstance it has been deemed safer to bail out for a free fall with a parachute that will automatically open at 10,000 to 12,000 ft. With rockets and the much-talked-of space ship, which will fly through ether in which there is no pressure and no oxygen, the paramount importance of maintaining adequate pressure levels is obvious, and the energy required to maintain pressure, let alone jet propulsion, is so great that even the most optimistic are loath to predict that the problem of fuel supply could be solved, despite all the resources of human ingenuity, within the life-span of this generation. Perhaps one might reach the moon, but how would energy be secured to insure return? More difficult conundrums have been solved in the past, but, although I happen to be an optimist with faith in the resourcefulness of some future generation, I believe that the only possible solution lies in atomic energy with all its weighty paraphernalia. "And so it turns out that in man's quest for mastery of the air a great step forward has been taken in the successful development of pressurized cabins. These developments, however, are in their early infancy from the engineering standpoint, and their use in larger transport planes, in rockets and jet-propelled craft, will succeed only if the limitations of the human frame, both in its structure and in its functions, are kept constantly in mind. And let us not forget that it was a flight surgeon and not an engineer who wrote the specifications for the first pressurized plane." [15]

Acceleration in High-Speed Aircraft.—The successful use of oxygen presupposes a steady blood circulation without undue gravitational pressure on the heart; however, it became obvious to the French flight surgeons in 1918 that rapid turns and dive pull-outs tended to diminish the flow of blood to the brain. In the Snyder Trophy Races in 1929, confusion and dimming of vision were encountered when the pilots were rounding the pylon; and in 1932 a man of great insight, Heinrich von Diringshofen of the German Air Ministry Research Laboratories at Tempelhof in Berlin, constructed a human centrifuge to simulate problems of acceleration in flight. Before this, however, two equally thoughtful Dutch investigators, Jongbloed and Noøyons of Utrecht, had studied the effects of acceleration on the level of the systolic blood pressure in animals. As a plane's speed is augmented or diminished, the pilot is pushed backward or forward in his seat by a force directly proportional to the rate of acceleration or deceleration. If the increase of speed occurs at 32.2 ft. per second, the pilot would be pushed against the back of his seat by a force equal to that of gravity, but, when pilots pull out of dive bomb maneuvers, the direction of the acceleration is from head to foot, and, as far as the circulation is concerned, there is a tendency to pull blood from the head.

Need for protection from high acceleration in aircraft has become even more acute in the last few years owing to the development of the fast-flying jet plane and the possibility of using rockets for human transportation. Even when planes were unable to fly at rates of more than 200 to 300 miles per hour, acceleration had become

14. Spealman, C. R.: Aviation Toxicology (An Introduction to the Subject and a Handbook of Data), New York, The Blakiston Company, 1953.
15. Fulton,[13] p. 114.

a vital problem, especially in dive bombers, and in fighter aircraft that were able to make fast turns. Now that jets are achieving speeds of 500 to 700 miles per hour, the need for protection from acceleration is vastly increased. The pneumatic pressure suit developed by Capt. John Poppen, USN (MC), Prof. F. A. S. Cotton in Australia, and Dr. Harold Lamport in New Haven, Conn., and many others, has served to give measurable and strategically significant protection for military pilots. Such suits have proved of inestimable value, especially during the D-Day operations, and more recently for our fighter pilots in Korea.

Design for Safety—During the war there were many instances in which a fast-flying bombing plane crashed into a mountain side and everyone on the plane, except for the tail gunner, was instantly killed. Accidents such as this have stirred inquiry into the reasons for these apparently miraculous survivals. They lie in the fact that the rear gunner's head and the rest of his body were supported by solid structure at the time of the impact and in the fact that he was riding backward. Those situated in a more forward position in a crashing airplane are thrown from their seats because of insufficient strength of seat belts and seat moorings, and according to the wartime report of Whittingham, director general of medical services of the R. A. F. (and now of B. O. A. C.), 95% of the deaths in air crashes result from head injury, i. e., the head of the passenger is thrown violently against solid structure.

It became obvious, in view of episodes such as these, that rear-facing, heavily moored seats would confer a degree of passenger safety at least 10 times as great as that which could be achieved with forward-facing seats with fragile seat belts to hold the passenger in place in the event of accident. The British public and airplane manufacturers have already seen the virtue of rear-facing seats, and many of their new passenger planes are so equipped. In the United States the resistance on the part of both the flying public, and more particularly the aircraft designers, has been so great that to date only Northwest Airlines have seen fit to install rear-facing seats in commercial craft.

The principles involved in the greater safety from rear-facing seats are simple. If one falls to the ground and strikes one's head on soft earth, the head is decelerated in a matter of a few tenths to one half a second; the blow being thus softened, the accident victim may not suffer concussion or unconsciousness. When, however, a person knocked off a bicycle strikes his head on solid cement that does not yield, he may suffer fracture of the skull, concussion, hemorrhage, and possibly even death. In these circumstances the head is decelerated in a matter of a hundredth of a second or less, depending on whether the falling person has on his head a soft felt hat or a football helmet. Crash helmets to minimize sudden deceleration of the head are now in use in almost every military aircraft, since pilots, unfortunately, are unable to occupy rear-facing seats with present flight equipment.

Mr. Hugh De Haven, director of crash injury research at Cornell University Medical College in New York, is, among others, responsible for stressing these considerations. In this connection, one of his most impressive studies has been the analysis of nonfatal suicide leaps in the city of New York. Persons have survived virtually uninjured after leaps from the 10th and even the 17th floor of New York buildings, and, when the circumstances are analyzed in any given case, it turns out that the intended suicide victim has usually landed flat on his back in a soft garden plot or on a ventilating screen, or his fall may have been broken by awnings or an automobile top. This again indicates the importance of gradual rather than abrupt deceleration. These principles have proved to be immediately applicable not only in aircraft design but also in the automotive industry. A summary of these considerations has been given in Hugh De Haven's "Development of Crash-Survival Design in Personal, Executive and Agricultural Aircraft." [16]

The literature of aviation medicine, the great part of which has come from military installations, affords many other examples of material that is immediately applicable to commercial aircraft and to the automotive industry. It stresses the importance of having men of vision, imagination, determination, and sound training in the medical departments of all our military services, for the contributions they make are likely to be of importance not only to military operations but to society in the broadest sense.

SUBMARINE MEDICINE

Submarine medicine offers many examples of scientific disclosures with general application, but they are of less immediate significance to the civilian public at the present time, since it is not much given to traveling in submersibles, except for a few hardy souls such as William Beebe, who study marine life at great depths in the sea, and the "frogmen," who do mysterious things at depths of 100 or more feet in the interests of national defense. Of course, the diver and the caisson worker can always learn much from submarine experience, especially about protection from caisson disease and diver's "bends." There is no journal of submarine medicine, but the physiological problems encountered by submarine personnel are numerous and the literature pertaining thereto has been analyzed, summarized, and systematically arranged in a remarkable bibliography by Commander Ebbe C. Hoff, USNR (MC)[17] entitled "A Bibliographical Sourcebook of Compressed Air, Diving and Submarine Medicine," published by the Navy Department through the Government Printing Office in February, 1948. The bibliography contains nearly 3,000 entries, each of which is summarized and reviewed in subject groups. It does not fall within the scope of this paper to discuss the technical phases of submarine medicine but attention should be directed to K. E. Schaefer's comprehensive monograph (826 pp.) on German submarine medicine.[18] Dr. Schaefer, chief of the Submarine Physiological Laboratory at Heidelberg during the war, is now continuing his important studies in the physiology branch of the U. S. Naval Medical Research Laboratories at New London, Conn. His recent reports from the submarine base should also be consulted.

16. De Haven, H.: Development of Crash-Survival Design in Personal, Executive and Agricultural Aircraft, Crash Injury Research, Cornell University Medical College, New York (May) 1953.

17. Hoff, E. C.: Bibliographical Sourcebook of Compressed Air, Diving and Submarine Medicine, Navy Department, United States Government Printing Office (Feb.) 1948.

18. Schaefer, K. E.: Symposium on Submarine Medicine, U. S. Fleet Naval Forces, Germany, Technical Section (Medical), 1950.

In closing this historical survey on the importance of military medicine to national and civilian defense I can do no better than to quote the words of Capt. J. S. Taylor, USA (MC), written after World War I: [19] "The world is far from even apprehending what it has yet to learn thoroughly, that in the field the distribution of medical supplies, prompt evacuation, skillful first aid, shelter, food, and restoratives available early for every fallen combatant are of infinitely more importance than highly technical relief to difficult cases. More critical still are the problems relating to later demobilization, to hospitalization and rehabilitation of war victims, and the faithful but well-ordered and economical relief of the wreckage of war. Millions will be spent and more millions wasted until the time comes when it is a recognized part of the program of national defense to organize methods of post bellum relief at the same time that activities are initiated for the prosecution of hostilities. We have progressed from the day of medical attendance for leaders to medical attendance for all combatants, and leaders are increasingly alive to the immediate necessary needs of their forces; but we have not yet attained to a comprehensive grasp of the requirements or possibilities of military medicine."

333 Cedar St.

19. Taylor, J. S.: A Retrospect of Naval and Military Medicine, U. S. Nav. M. Bull. 15 (no. 3): 561, 1921, p. 608.

RADIATION PROTECTION COMES OF AGE

Richard H. Chamberlain, M.D., Philadelphia

There is now a large body of information regarding the hazards to human beings from ionizing radiations derived from x-ray sources, radioactive substances, particle accelerators, and nuclear fission.[1] There is also a wide appreciation of the need for intelligently applied protective measures, and for special training of those to whom the responsibility for protection is delegated. The fact that ionizing radiations produced reactions in living tissues was appreciated within a very short time after the discovery of x-rays and radium, but knowledge of the extent of the hazards and the degree of protection required was slowly accumulated over the first 35 years of this century. Knowledge depended on the evolution of the physics of radiation and the development of precise and sensitive instruments for measurement as well as the long latent period involved in biological responses to radiation.

By 1935 a new era in radiation protection became possible. The international acceptance of the roentgen as the unit of ionizing radiation made it possible to specify the amounts of radiation that were permissible. Instruments with stable and reproducible ionization response made it possible to measure the amounts received. The accumulation of radiobiological data furnished enough information to specify reasonable maximum permissible exposure levels. All three of these considerations have been subjected to even more intensive study in the recent past and furnish logical support for answers to the classic questions: 1. What is hazardous radiation, requiring protective measures? 2. Who should be protected? 3. How can protection best be achieved?

There is need for the application of some common sense in defining what constitutes hazardous radiation. A good deal of ungrounded fear has been generated in concern over the potential dangers associated with the development of atomic energy and the increasing medical uses of radiation. It seems reasonable to state that the hazards from these sources have been far less than the benefits derived in the form of increased awareness of the problem. The few accidents that have occurred in work with atomic energy have been limited to quite restricted situations in which the dangers were fully realized and the risk of these was unavoidable in accomplishing definite goals.

In medical use, standards of good protection practice have constantly improved and the majority of untoward exposures have been associated with risks purposefully encountered in the need for diagnosis of or treatment of disease by radiation methods. There is room for improvement, however, and so much of the responsibility for bringing about good practice of radiation protection depends on the medical profession that particular attention to universal acceptance of high standards is indicated. The increasing industrial use of radiation has also generally been accompanied by awareness of the protection problems and by good safety records.

The exposure of human beings to any unnecessary radiation is not to be encouraged; when no benefit can be expected, some exposures can be categorically forbidden. A situation of this type exists in the use of x-ray fluoroscopes for shoe-fitting, inasmuch as competent orthopedic authorities state that no benefit is to be achieved by their use in fitting shoes. Yet, one must be aware of the daily exposure of all human beings to measurable levels of ionizing radiations in the form of cosmic radiation and the emissions of natural radioactive substances, such as potassium 40, carbon 14, and radon, which are natural constituents of our environment, our food, and our bodies. We are also exposed to minute

From the Department of Radiology, University of Pennsylvania.

Drs. Eugene P. Pendergrass, L. S. Taylor, and G. Failla assisted in the preparation of this paper.

1. Stone, Robert S.: The Concept of a Maximum Permissible Exposure: Carmen Lecture, Radiology **58**: 639-661 (May) 1952. Taylor, L. S.: The Philosophy of the Development of Radiation Protection, personal communication to the author. Evans, R. D.: Quantitative Inferences Concerning the Genetic Effects of Radiation on Human Beings, Science **109**: 299-304 (March 25) 1949. Henshaw, P. S., and Hawkins, J. W.: Incidence of Leukemia in Physicians, J. Nat. Cancer Inst. **4**: 339-346 (Feb.) 1944. Paterson, R.: Symposium: Protection Against Radiations in Medical and Industrial Practice: Effects of Radiation on Workers, Brit. J. Radiol. **16**: 3-5 (Jan.) 1943. Zirkle, R. E.: Biological Effects of External Beta Radiation, National Nuclear Energy Series, Manhattan Project Technical Section, Division IV, Plutonium Project Record, New York, McGraw-Hill Book Company, Inc., 1951, vol. 22E. Ritter, V. W.; Warren, S. R. Jr., and Pendergrass, E. P.: Roentgen Doses During Diagnostic Procedures, Radiology **59**: 238-251 (Aug.) 1952. Recommendations of the International Commission on Radiological Protection and of the International Commission on Radiological Units, 1950, handbook 47, United States Department of Commerce, National Bureau of Standards, June 29, 1951; Maximum Permissible Amounts of Radioisotopes in the Human Body and Maximum Permissible Concentrations in Air and Water, handbook 52, March 20, 1953; Safe Handling of Radioactive Isotopes, handbook 42, Sept., 1949; Control and Removal of Radioactive Contamination in Laboratories, handbook 48, Dec. 15, 1951; Medical X-Ray Protection up to 2 Million Volts, handbook 41, March, 1949; Recommendations for Waste Disposal of Phosphorous-32 and Iodine-131 for Medical Users, handbook 49, Nov. 2, 1951. Wyckoff, H. O., and Taylor, L. S.: X-Ray Protection Design, handbook 50, United States Department of Commerce, National Bureau of Standards, May 9, 1952. Radiological Monitoring Methods and Instruments, handbook 51, United States Department of Commerce, National Bureau of Standards, April 7, 1952.

amounts of radiation from luminous dial watches and clocks and certain types of eyeglass lenses, and still smaller amounts from other appurtenances of modern civilization such as projection television apparatus and the cumulative effects of the release of atomic energy.

WHAT CONSTITUTES A RADIATION HAZARD

The problem, then, of what constitutes a radiation hazard, is one of degree and quantity. By international agreement, the maximum permissible exposure, to the whole body or gonads, has been set at 0.3 r per week measured in free air (0.5 r on the body surface) or, in the the case of the hands and forearms, at 1.5 r per week. Both of these refer to externally originating x-rays or gamma rays of quantum energy less than 3.0 mev. Appropriate physical and biological equivalents are used for other forms of ionizing radiations. These recommendations are made for use in unavoidable exposure for adequate reasons and do not imply either that they limit the use of higher levels for good and sufficient cause, as for medical diagnosis or treatment, or that the least possible exposure should fail to be the goal at all times. They presume that the exposures may be repeated in regular occupation. The recommendations are based on the pooled opinions of experts forming the National Committee on Radiation Protection and the International Commission on Radiation Protection and embody the best knowledge currently available of skin, whole body, gonad, and blood responses of human beings and experimental animals as well as special consideration of the relationship of radiation to gene mutations and to the production of carcinoma and leukemia.

In making use of these recommendations, it is still necessary to apply interpretation of the degree of need for a particular radiation exposure as well as considerable skill in the measurement of the physical factors that will deliver it. This requires understanding by informed personnel, applied with common sense, and, as we shall discuss later, usually the decision must be made by the actual user of the radiation.

WHO SHOULD BE PROTECTED

The question as to who should be protected would seem to be an easy one, but the answer is influenced by the foregoing examination of the useful purpose gained by the exposure. At one extreme might be placed the medical patient with malignant disease in which cure or at least palliation of the disease might be expected. In this instance, normal considerations of protection must be foregone. While it is still desirable to give as little radiation as possible, the treatment may be carried to the point just short of where the acute effects of the radiation are as dangerous to the patient's life as the malignant disease. This is in the order of 1,000 times the general level of exposure expressed in the maximum permissible exposure recommendations. Strict comparisons with maximum permissible exposure values cannot be made because of the time factors and repetition involved, but are used here to indicate the quantities in general terms. In roentgen diagnosis, the judgment as to how much radiation may be employed is best individualized in each instance, but it never should reach the dosages used for malignant disease. Even for exceptional situations diagnostic uses do not usually exceed 10 to 50 times the weekly maximum permissible exposure and are not repeated without adequate indication.

At the other extreme one should consider the "innocent bystander" and the public at large. For no better reason than that nothing useful is derived from their exposure to radiation, this is the group that should receive the least. Yet, the natural radiation sources combine to produce exposures of a probable maximum of 0.015 r per week, or about 1/20 of the maximum permissible level. The only known potential hazard of doubling or tripling this unavoidable radiation is the genetic one, for which precise information is not currently available, but it merits attention in any measure that might appreciably raise the natural exposure of the general population. The potential genetic dangers should also be considered in all uses of radiation, and special shielding or other protection is desirable wherever it can be employed.

It is the group that fits into neither of the previous categories that is most difficult to define, and, to my best knowledge, no satisfactory statement of what constitutes a "radiation worker" has been offered. In actual practice, most persons who are employed in the vicinity of radiation sources and have something to do with them receive about 0.03 r per week, which seems to be a reasonable and not excessive increase over the natural background. Certainly, every effort should be made to keep radiation exposures to levels of this order. If, however, one has adequate knowledge of the dangers, cannot reasonably avoid them, and is doing so for a meritorious purpose, judgment may allow the overriding of standard recommendations. In almost every instance of this type, however, it will be found that exposures can be brought to within the recommended amounts by the use of better technical procedures, and the greater one's knowledge of the hazards becomes, the more effort will be expended in achieving such improvements. Similar situations may be encountered in atomic warfare and the military use of atomic energy. Nevertheless this should not lessen the force of the standard recommendations.

HOW TO PROVIDE RADIATION PROTECTION

In establishing how to provide radiation protection, the data that have been collected and disseminated are brought into good practical application. This has been carried to a high degree of usefulness in medical radiology, industry, and atomic energy facilities by cooperation and individual initiative. As with all safety measures, new methods are constantly being introduced, and some procedures always need revising to bring them up to the best standards. The effectiveness of protection in the United States is due to three factors: (1) information, basic and applied; (2) education and professional standards; and (3) methods of good practice.

Basic and Applied Information.—Information has been accumulated and tirelessly disseminated in recent years by the National Committee on Radiation Protection, articles in pertinent professional and technical publications, and the Atomic Energy Commission. Detailed descriptions of the hazards involved in the complete spectrum of radiation sources, applied data for special uses, and methods for use, protection from, and disposal of radioactive materials can usually be found in the hand-

books published through the Bureau of Standards and the United States Government Printing Office for the National Committee on Radiation Protection. This committee, and its subcommittees for each handbook, have been composed of the best available experts from medical, industrial, physical, and governmental sources for each topic. They have elaborated on the recommendations of the International Commission on Radiation Protection and cooperated with it. These handbooks constitute a satisfactory code of good opinion and usage and have been used not only by private and industrial workers but also by the Atomic Energy Commission and other governmental agencies. Problems not covered in these publications are usually highly specialized and can be derived from them or found in publications from other sources.

Education and Professional Standards.—As with other advanced technical activities that require intelligent judgment, education and professional standards offer the only valid method of ensuring good practice. The interpretation of the general rules or pattern of protection in the individual case cannot be achieved through legislation or the issuing of licenses. In general, competency depends on the education and experience of the user. In medicine, exceptional qualifications in these respects are attained by the radiologists in their training in radiation physics and radiobiology and by the group of radiological physicists that collaborates with them. Both of these are eligible for certification by the American Board of Radiology on attainment of proficiency and adequate background in these respects. Other physicians who need to use radiation in certain fields can and should receive training in the special problems of radiation protection. To omit this important training for even the use of chest fluoroscopes or occasional radiography is the equivalent of omitting the basic training in any of the medical fields in preparation for the use of life-giving but potentially dangerous agents. The trend in medicine is toward the centering of the management of radiation-producing materials in the hands of certified radiologists, or at least to the supervision of the protective aspects by such specialists and their co-workers in radiological physics. Obviously others who demonstrate sufficient knowledge and experience should also be permitted to work with radioactive materials.

For use in man of radioactive isotopes produced by or obtained through the Atomic Energy Commission, a special form of control has been derived from the provisions of the Atomic Energy Act. This legislation requires the Atomic Energy Commission to ensure that proper safety and health precautions are employed as a requisite to obtaining of radioactive isotopes from the commission. Recognizing the difficulty of decisions for both medical and other uses, the Atomic Energy Commission has used committees of specialist consultants in helping with the evaluation of applications from the standpoint of health and safety. In practice, it has evolved that the initial judgment can be based on education and experience, the reasonableness of the use and dosages proposed, and the adequacy of physics consultation and instrumentation. Nevertheless, the final execution of adequate protection depends on the local situation and, because of this, the further requirement of a local isotope committee composed of a suitable group of experts has been made, except for special situations where the use of the radioactive material has become well standardized and for applicants with previously demonstrated and well-proved experience. In major educational institutions with local committees of exceptional experience, and when the volume of uses of radioactive materials has been rather large, the determination of procedure for individual uses has been shifted to the local committee with the issuance of "general authorizations."

This pattern of committee approvals of the uses of radiation materials and sources has also been the basis for recent actions by the American Medical Association and the American Hospital Association in setting up methods for control of radiation protection in approved hospitals. In the employment of a special hospital committee that can investigate locally the adequacy of an installation and the qualifications of the user, the best practical method is likely to be obtained. The committee should consist of at least a radiologist, preferably a radiological physicist, and advantageously a hematologist or interested internist. For radioactive isotopes a biochemist or pharmacologist can contribute to the understanding of the safety factors.

In the Atomic Energy Commission and in industry, as well as in medicine and university centers, there has developed a group of safety and health consultants who do not have the medical experience of certified radiological physicists but whose primary concern has been the supervision of adequate radiation protection. Many of these workers are quite competent to control the physical aspects of the problem, particularly if they are working with committees as outlined above. A registry of such qualified consultants is currently being formed.

Methods of Good Practice.—The methods of good practice depend on the needs in the particular situation in which radiation is being used, be it for research, medical diagnosis or treatment, industry, Atomic Energy Commission, or military application. The general plan in setting up a program for radiation protection will probably follow along these lines: (*a*) formation of a well-informed and well-trained group or acquisition of the same information and training by an individual; (*b*) establishment of a well-designed and properly protected installation with good equipment; (*c*) initial inspection and testing of the safety of the apparatus and radiation sources; (*d*) appraisal of the indications and levels for radiation exposure of all persons, including "workers," patient, and the general public; and (*e*) establishment of a regular system of monitoring with safety and health consultations with competent physicists.

SUMMARY

With the increasing use of ionizing radiations, adequate knowledge of the nature of the hazards has been gained. Within reasonable limits, we now understand what constitutes hazardous radiation for which protection is required and have the instruments and units with which to measure it. Who should be protected and the degree of protection required depends on individual circumstances, but the least radiation that can be given is always the best. How to achieve adequate protection is best determined according to the education and experi-

ence of the user in consultation with suitable consultants and advisers. Local committee control with a good program of safety measures tailored to the particular situation seems to offer the best solution to maintaining good radiation protection in practice.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

REPORT OF THE COUNCIL

The Council has authorized publication of the following article.

RALPH E. DE FOREST, M.D., *Secretary.*

The Transistor Hearing Aid

A recent development in the electronic field is the transistor, a substitute for the vacuum tube. One application of the transistor is in the hearing aid. The Council on Physical Medicine and Rehabilitation anticipates that many transistor hearing aids will appear on the market; therefore a general statement on their merits and shortcomings is in order. Research on the transistor was carried out at the Bell Telephone Laboratories, and now several manufacturers are licensed to develop and produce transistors. Not all of the deficiencies associated with mass production of a new product have been overcome. Research is continuing.

There are three kinds of transistors: the junction, the alloy-diffusion junction, and the point-contact types. A typical form of junction transistor is a small rectangular block measuring 12 by 7 by 5 mm. Its longest dimension is actually no more than one-half inch, so that it is smaller than the miniature vacuum tube used in the conventional hearing aid. Three wires project from one end of the block. The middle wire is the *base* wire; it connects with a "positive germanium" area inside the block. This area is between two "negative germanium" areas. One of these two areas connects with the so-called *collector* wire, the other with the *emitter* wire.

Germanium is element 32 in the periodic table and is classified as a semiconductor. Its electric properties are strongly affected by impurities, so that germanium with small amounts of antimony or arsenic is called positive germanium, while germanium with small amounts of aluminum or gallium is called negative germanium. Elaborate theories explain the occurrences in the transistor, but the fact of practical importance is that, if a variable current is passed between emitter and base wires, corresponding variations are imposed on any current that may be passing between emitter and collector wires. In other words, the base current influences the collector current, and the effect is one of considerable amplification.

The junction transistor just described is also called the "n-p-n transistor," because the positive germanium is located between the negative germanium areas. Another kind is the point-contact transistor, which is not used in modern hearing aids.

The alloy-diffusion type of transistor is becoming more and more popular. It is a form of junction transistor and consists of a tiny pellet of negative germanium on one side of which is diffused a positive bead of indium (or gallium), with a similar bead of indium on the opposite side. The base wire is connected to the germanium. The emitter wire is connected to one bead of indium and the collector wire to the other. The germanium and indium, occupying a volume no more than 1 cu. mm., are sealed in plastic. The complete transistor, which has three wires extending from it, is no larger than a miniature vacuum tube.

The most important advantage of the transistor hearing aid is its economy of operation. The all-transistor hearing aid needs only one battery. The all-vacuum-tube hearing aid requires a B-battery and an A-battery. The A-battery heats the filament for electron emission, and the B-battery establishes the positive pole for the plate and is a source of power for acoustical amplification. The transistor has no filament, hence only one battery is required. Fortunately, this battery can be a 1.5 volt carbon-zinc dry cell or a small 1.2 volt mercury battery. In the vacuum tube, heating of the filament requires the most power. Since the transistor does not require heater current, obviously a large saving can be realized.

It is not known at present whether some of the shortcomings of the vacuum tube hearing aid will be eliminated by the use of transistors. It is conceivable that the noises resulting from thermal emission and from the movements of the filament, plates, and grids in the vacuum tube that are caused by mechanical shock can be minimized. On the other hand, additional background noises in the transistor may take their place.

At the present time, it appears that no significant change has been made in the size of the transistor hearing aids over the vacuum tube hearing aids. One would assume that with the elimination of a B-battery, the over-all size would be smaller; but this battery space is filled with other components of the transistor circuit that are needed for its operation. In time the transistor hearing aids may be lighter and smaller, but there is no significant change in the outward appearance at this time.

Since the hearing aid is a new application for the transistor, it is reasonable to expect that many deficiencies and shortcomings in performance will be encountered. The new components necessary to couple the transistors within the circuit may cause some trouble, but it is more than likely that the major failures will be in the transistor itself. The transistor is new, and not all of the imperfections have been eliminated. The hearing aid may appear to "sleep," that is, to act as though it had an open circuit or the battery were dead or as if it were not functioning at its original efficiency. In order to cover these insufficiencies, the purchaser should insist on a guarantee that the instrument will be maintained in top condition for at least one year and that all defective transistors will be replaced without cost.

There are three general types of transistor hearing aids known at this time. 1. The all-transistor type uses a crystal microphone, three transistors, a magnetic type earphone, and one low voltage battery with the necessary circuits. 2. The combination type consists of a crystal microphone, two vacuum tubes, one transistor, which takes the place of the power vacuum tube amplifier, a magnetic type earphone, and an A-battery and a B-battery with the necessary circuits. 3. The single transistor type consists of a carbon-granular microphone (a telephone type of transmitter), one transistor, a magnetic type earphone, and a low voltage battery plus the necessary circuits. This instrument obtains its amplification in part from the transistor and in part from the carbon-granular microphone, which in itself is an amplifier.

The most important advantage of the transistor hearing aid that can be claimed at the present time is a significant reduction in operational cost, as much as 80% and perhaps more. At present it seems that the size and weight of the hearing aid will not be changed appreciably. There does not seem to be any significant improvement in amplification, in tone quality, or in fidelity of the transistor hearing aid over other kinds. The purchaser should insist on a written guarantee to cover possible mechanical and electrical defects in the instrument.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Editor . . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . . "Medic, Chicago"

THE WORLD MEDICAL ASSOCIATION AND MEDICAL EDUCATION

Under the auspices of the World Medical Association there was held recently in London a conference on medical education. This was unique because it was the first world conference on this subject. Collaborating with the World Medical Association were the World Health Organization, the Council for International Organizations of the Medical Sciences, and the International Association of Universities.

The first World Conference on Medical Education was a notable event for the World Medical Association and for medical education. For the World Medical Association it demonstrated the capacity of this organization to organize a major international conference that was hailed by all who attended it as being outstanding for its broad and fundamental approach to the subject under discussion and for the quality of the papers and discussions presented.

For medical education, the conference made it clear that medical schools throughout all parts of the civilized world have the same fundamental problems. Basic concerns of medical educators from Asia, Europe, the United Kingdom, Latin America, Australia, and North America were almost indistinguishable. All recognized the difficulty of accommodating in an already overcrowded curriculum the rapidly growing body of fundamental medical knowledge. Apparently in every part of the world students are being forced by the pressures of the amount of material to be covered to too early specialization in their studies to the neglect of the humanities, the social sciences, and indeed to the broader aspects of medicine itself.

The desire for more effective integration of the various subjects taught in medical school appears to be the monopoly of no country. Also, the conference brought out the fact that there is universal recognition of the need for more stress on preventive and social medicine in the education of physicians.

No dissent was heard from any quarter to the description of the type of person who makes the ideal medical student as so delineated by Sir Lionel Whitby, president of the conference. There was general concern, however, that medical schools may forget that the medical student is a human being with most of the frailties and limitations of his species. The difficulty of selecting the most promising students from among the large number of applicants who seek to study medicine is apparently a world-wide problem. No country claimed that it has found a satisfactory answer to the problem, although experience and experiments with many different methods of selection were reported.

In keeping with the spirit of the conference, no resolutions were passed, and no programs were formulated or adopted. The conference adhered strictly to the concept that it was to provide an opportunity for free exchange and discussion of ideas and experiences. Those who attended the conference agreed that its most important effect would be to strengthen the faith of medical educators in the basic ideals of medical education and that the spirited discussion of these ideals and of the best ways of achieving them would furnish motive power for further advances in medical education in all countries represented at the conference.

The most convincing evidence of the success of the meeting was the spontaneous expression by those in attendance of the hope that another conference of the same type would be held again as soon as practicable so that the momentum of international exchange and discussion so well initiated by this conference would not be lost.

The British Medical Association acted as the host organization, and other groups served as benefactors by providing contributions to help meet the expenses for this conference. Included are firms the names of which are very familiar to American physicians, e. g., Abbott Laboratories, American Home Products, Burroughs Wellcome, Ciba, Parke Davis, Pfizer, Sharp & Dohme, R. P. Sherer, Gelatin Products, and Wyeth. Other organizations, from the United Kingdom and the European continent, indicated their desire to support the conference. Among the foundations providing money were Pfeiffer Research Foundation, Lasdon Foundation, National Foundation for Infantile Paralysis, and the Wellcome Foundation. The United States Public Health Service also contributed generously.

Other names could also be mentioned for their relation in the program and its organization, but they would only emphasize further one point—the broad interest shown in the conference. It is not easy to arrange such a gathering of talent from throughout the world and to provide facilities for meeting plans, but it was done splendidly, and everyone who had some part in making the conference possible can be pleased with the results of their efforts and the appreciation held by all visitors.

The setting for the meeting was aptly expressed by Sir Lionel Whitby. He wrote: "Many of us are convinced that the dominant problem facing the medical profession in the second half of the twentieth century is

the problem of medical education. In an age of ever-increasing scientific advance and ever-increasing specialisation of knowledge, how can we best teach the young men and women who will be our successors as the doctors of the future? What are to be the subjects? What are the principles that should guide us?

"It is the purpose of this conference not to give any final answer to these fundamental questions, but to explore the situation as we find it in this year 1953. The object of the conference is to provide an opportunity for the interchange of thoughts and experience by the doctors of many lands so that we can shape the future development of undergraduate medical education."

This challenge was accepted enthusiastically by men and women interested in medical education in many countries. Those who gave papers and led discussions represented countries too numerous to mention. Participation by the several hundred visitors was made pleasant and productive through the use of the three official languages of the World Medical Association, Spanish, French, and English. Of no small interest were the social events and technical exhibits.

Some of the papers offered at the conference and a summary of the proceedings appear in the August 29, September 5, and September 12 issues of the *British Medical Journal*. All of the papers and much of the discussion will be published in the future by the Oxford University Press under the general editorship of Dr. Hugh Clegg, who is the editor of the *British Medical Journal*. Orders for the proceedings were taken at the conference but may also be sent to the publisher and to the office of the editor.

The first world conference on medical education reflects unequivocally the farsighted objectives of the World Medical Association. Unlike the World Health Organization, which represents the governments of the member countries, the World Medical Association represents the voluntary medical organizations in more than 40 countries. Its influence already has been felt in several quarters, and as it continues to grow it will be even more effective as a voice for doctors as a whole throughout the world. Those who have watched this organization from its beginning have seen it develop within less than a decade into a watchful, fact-finding, and, when necessary, hard-hitting body. Twice a year the council of the World Medical Association meets to consider many problems, and once a year there is a general assembly where representatives from member countries can act on these problems. Each year the assembly meets in a different city. In 1952 it met in Athens, in 1953 in The Hague. In 1954 the assembly will convene in Rome. Between now and then physicians and their friends can make plans for the conference in this fascinating city with its background of cultural interests. Details will appear in later issues of THE JOURNAL, but they can also be obtained from the office of the Secretary-General, Dr. Louis H. Bauer, 345 East 46th Street, New York, N. Y.

BEHAVIOR CHANGES IN CHILDREN SUBJECTED TO TONSILLECTOMY

During a period of three years Jackson and her associates [1] observed a group of 140 children aged 3 to 8 years before and after they were subjected to tonsillectomy in an effort to learn whether and under what circumstances this surgical experience was associated with behavior changes that indicated emotional trauma. They devised a method of study that consisted of conferences between a psychiatric social worker and the mother and child, at which time certain facts about the child's behavior and emotional status were determined. The interviews took place before tonsillectomy, in the period immediately after the surgical procedure, and after a lapse of three months. The information obtained during the various interviews was then studied by a committee consisting of three pediatricians, the social worker who conducted the interview, and the anesthetist in attendance at the operation. In addition, two psychoanalysts, a psychologist, and a public health pediatrician served as consultants to the committee. The children were operated on by one of three otolaryngologists at one of three hospitals. About half the children were anesthetized by a person who possessed both special knowledge and experience in emotional problems as well as extensive skill and training in the field of anesthesia.

In more than 50% of the children behavior either improved or showed no change, while in 30% of the group there was improvement in some traits and disturbance in others. In most instances mothers considered the behavior of the children to have improved after the tonsillectomy procedure, although in a few cases some of the behavior disturbances appeared to outweigh the general trend toward improvement. Of the entire group of 140 children, behavior changes indicative of emotional trauma occurred in 13. In general, it was revealed that children who were treated considerately as patients and those who had not been exposed to previous episodes of emotional trauma showed less evidence of emotional trauma after tonsillectomy. The youngest children in the group manifested more, albeit milder, adverse alterations in behavior. Interestingly enough, 91% of the entire group of 140 children were either benefited or scarcely affected by the tonsillectomy procedure. In general, this study suggests that considerate and compassionate management of young children who are subjected to tonsillectomy will restrict behavior changes attributable to the surgical experience to a minimum.

1. Jackson, K., and others: Behavior Changes Indicating Emotional Trauma in Tonsillectomized Children, Pediatrics **12**: 23 (July) 1953.

ORGANIZATION SECTION

ST. LOUIS CLINICAL MEETING, DEC. 1-4

Final details for the Clinical Meeting in St. Louis are almost completed. The program of clinical presentations will be outstanding, with lectures by prominent physicians from all parts of the country. The Scientific Exhibit will be correlated as far as possible with the clinical presentations. There will be several special features in addition, however, which will attract much attention.

Diabetes

The subject of diabetes will be presented under the auspices of the Joslin Clinic, New England Deaconess Hospital, Boston, and the St. Louis Diabetic Association. The chairman is Howard F. Root, M.D., Boston. A large exhibit will present data regarding the prolongation of life derived from the follow-up of many thousands of cases, with the causes of death in 12,000 cases. Prevention and treatment of toxemia in pregnant diabetics will be shown, together with the classification of pregnant diabetics for decision as to hormonal therapy, with the mode and date of delivery. Other factors include the treatment of coma and the prevention of degenerative sequelae in eyes, arteries, and kidneys.

Associated with the exhibit in an adjoining room will be a question and answer conference on diabetes daily from 10:00 a. m. to 1:00 p. m. beginning Tuesday morning and ending Friday at 12:00 noon. Twenty-minute discussion periods with questions and answers will be conducted according to a prearranged schedule, covering all phases of the diabetes problem. Among the discussants will be Howard F. Root, M.D., Boston; Robert McElvain, M.D., St. Louis; John L. Kennedy, M.D., St. Louis; George Mahe, M.D., St. Louis; Priscilla White, M.D., Boston; William H. Olmsted, M.D., St. Louis; Joseph C. Edwards, M.D., St. Louis; Sallie Wood, St. Louis; Henry E. Oppenheimer, M.D., St. Louis, and E. Paul Sheridan, M.D., Denver. Many patients will be presented to illustrate various points emphasized by the speakers.

Prevention of Traffic Accidents

An exhibit symposium on the prevention of traffic accidents will combine the experiences of the police, the Safety Council, and the medical profession. The following topics are on the program. Attendants will be present continuously throughout the week to demonstrate and answer questions:

Human Ingredient in Traffic Accidents.

JACOB KULOWSKI, M.D., St. Joseph, Mo.

Testing the Drinking Driver.

HERMAN A. HEISE, M.D., Milwaukee, Committee on Tests for Intoxication, National Safety Council, and Committee on Medicolegal Problems, American Medical Association.

Traffic Accidents Can Be Prevented.

HUGH H. WAGGONER, Missouri State Highway Patrol, Jefferson City, Mo.

Safety Educational Program.

DAVID M. BALDWIN, National Safety Council, Chicago.

Crash Injury Research.

INDIANA STATE MEDICAL ASSOCIATION AND INDIANA STATE POLICE, Indianapolis.

The Physician's Responsibility in the Prevention of Traffic Accidents.

CAREY N. MOON, M.D., FLETCHER D. WOODWARD, M.D., and EDWARD L. COREY, M.D., University of Virginia School of Medicine, Charlottesville.

Problems of Delivery

Manikin demonstrations on problems of delivery will be presented by an outstanding group of obstetricians in a room adjoining the Scientific Exhibit. Demonstrations will be conducted on Tuesday and Wednesday at 10:00 a. m., 12:00 noon, 2:30 p. m.; on Thursday at 12:00 noon, 2:30 p. m., and 4:30 p. m., and on Friday at 10:00 a. m. Richard Paddock, M.D., St. Louis, is the chairman.

Fractures

The fracture exhibit, which has long been a feature of the Scientific Exhibit, will cover fractures resulting from a fall on the outstretched hand, fractures of the lower end of the radius, and fractures of the ankle. The committee in charge will be Gordon M. Morrison, M.D., Boston, chairman; Ralph G. Carothers, M.D., Cincinnati, and Herbert Virgin Jr., M.D., Miami, Fla. They will be assisted by a large group of surgeons experienced in the treatment of fractures.

"MARCH OF MEDICINE" SERIES

Research and treatment of heart disease will be the subject of the first program of "The March of Medicine" television series being launched Oct. 8 over the National Broadcasting Company TV network. Over 70 stations in the United States and Canada will carry the progress report on study of coronary artery disease and hypertensive heart disease. The telecast will originate in Boston, Thursday, Oct. 8, at 10 p. m. (EST). Television audiences will find local time and channel in newspaper advertisements in cities carrying the programs. The medical profession has been informed of the TV series through announcements mailed by Smith, Kline & French Laboratories, the sponsor and producer.

The three-program series, produced in cooperation with the American Medical Association, is designed to give the public better insight into some of the nation's major health problems. Actual live presentations will be telecast from some of the leading medical centers in order to create greater public awareness of the extensive research being carried out by the medical profession.

The second in the fall series, on Nov. 5, will feature the tremendous effort and study being undertaken in the fight against cancer. Highlights of medical progress as reported at the A. M. A. Clinical Meeting in St. Louis will be televised in the third program Dec. 3. Cooperating in the Oct. 8 telecast will be members of the staffs of several hospitals in the Boston area, associated with Harvard Medical School, Boston University School of Medicine, and Tufts College Medical School. Among physicians appearing will be Herrman L. Blumgart, M.D., professor of medicine, Harvard Medical School; Howard B. Sprague, M.D., clinical associate in medicine, Harvard Medical School; Paul D. White, M.D., consultant, Massachusetts General Hospital; and Robert M. Wilkins, M.D., associate professor of medicine, Boston University School of Medicine.

REPORT ON GRIEVANCE COMMITTEES

Just off the presses is a detailed report on county medical society grievance committees. Prepared by the A. M. A.'s Council on Medical Service, this study deals with the organization, functions and operations of 198 mediation committees throughout the country. To make the data of more practical value, the societies have been divided into groups according to size. Copies are available from the Council (see page 510).

PR CONFERENCE IN ST. LOUIS

The A. M. A.'s sixth annual National Medical Public Relations Conference will be held Monday, Nov. 30.—the day before the opening of the Clinical Session—at the Jefferson Hotel, St. Louis. The Conference program will be geared primarily for physicians. Members of the House of Delegates, officers of state and county medical societies, officers of the Association and executive secretaries and PR personnel are cordially invited.

MEDICAL NEWS

CALIFORNIA

City of Hope Plans Expansion.—At its recent anniversary convention at the Ambassador Hotel, Los Angeles, the City of Hope (formerly the Los Angeles Sanatorium in Duarte) adopted a budget of $6,800,000 to carry on for the next two years. This budget, an increase of 2 million dollars over the 1951-1953 period, will permit the medical center, a nonprofit organization for the treatment of tuberculosis and cancer, to broaden its research and training program and will establish the groundwork for the creation of a new medical college at the City of Hope.

CONNECTICUT

Hospital News.—Dr. H. Edward MacMahon, professor of pathology, Tufts College Medical School, Boston, will give an address entitled "Liver Changes in Biliary Xanthomatosis" at Hartford Hospital, Oct. 10, 11 a. m.

General Practitioners Meet in Hartford.—The annual scientific assembly of the Connecticut chapter, American Academy of General Practice, will convene at the Hotel Bond, Hartford, Oct. 8, under the presidency of Dr. Edwin R. Connors, Bridgeport. The following program will be presented:

Peptic Ulcer, Samuel F. Marshall, Boston.
Headache—As the Neurosurgeon and the General Practitioner See It, J. Rudolph Jaeger, Philadelphia.
Management of Common Gynecological Problems, Walter J. Reich, Chicago.
Management and Diagnosis of Tumors of the Liver, George T. Pack, New York.
Diagnosis and Treatment of Acute Cardiovascular Emergencies, Joseph B. Vander Veer, Philadelphia.
Diagnosis and Treatment of Psychosomatic Disorders, Edward Weiss, Philadelphia.

A cocktail hour, 6:30-7:30 p. m., will precede dinner, after which Dr. John S. DeTar, Milan, Mich., will discuss "What the Academy of General Practice Means to the General Practitioner."

DELAWARE

State Medical Meeting at Wilmington.—The Medical Society of Delaware will hold its annual meeting at the Hotel DuPont, Wilmington, Oct. 12, under the presidency of Dr. Victor D. Washburn, Wilmington, who will deliver the presidential address, Wednesday, 11:30 a. m. On Tuesday, the annual reception and dinner will be followed, at 9 p. m., by an address by Dr. Thomas H. Alphin, Washington, D. C. Presentations at the scientific session include:

Daniel J. Preston and John W. Alden Jr., Wilmington, Incidence of Common Bile Duct Disease Following Surgical Exploration.
R. Douglas Sanders, Wilmington, Anesthesia Services in Delaware.
Harold S. Rafal, Wilmington, Report on Cancer Detection to the Physicians of Delaware.
Anthony F. DePalma, Philadelphia, Frozen Shoulder.
Richard A. Neubauer, Wilmington, Importance of Body Fluid and Electrolytes in Clinical Medicine.
Harold W. Lovell, New York, Abuse of the Barbiturates.
Hon. Thomas Herlihy Jr., Wilmington, Legal Aspects of the Barbiturate Problem in Delaware.
Caziville L. Hudiburg, Wilmington, American Medical Education Foundation.
Philip B. Gordy, Wilmington, Diagnosis and Treatment of Spontaneous Subarachnoid Hemorrhage.
William Likoff, Philadelphia, Treatment of Cardiac Emergencies.
William T. Green, Boston, Early Management in Poliomyelitis.
Chauncey L. Palmer, Pittsburgh, Medical Care Program for the Indigent in Pennsylvania.
Mark V. Ziegler, Baltimore, Administration of a Medical Care Program by the Maryland State Department of Health.
J. Wilfrid Davis, Baltimore, Baltimore City Medical Program.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

ILLINOIS

Meeting to Honor Dr. Ciocatto.—The Illinois and Chicago societies of anesthesiologists will honor Dr. Enrico Ciocatto, professor of anesthesiology, University of Turin, Italy, at a buffet dinner and meeting at the Tally Ho room of the Sheraton Hotel, 505 N. Michigan Av., Chicago, Oct. 10, 6:30 p. m. Dr. Ciocatto, a native of Oklahoma, is editor-in-chief of the *Minerva Anesthesiologica* (Italian journal of anesthesiology). For reservation send check ($4.50), together with stamped, self-addressed return envelope, to Dr. Huberta M. Livingstone, 5805 Dorchester Ave., Chicago 37.

Award for Surgical Research.—The Chicago Surgical Society announces that the 1954 Nelson M. Percy award of $500 for surgical research will be made by Dr. Nelson M. Percy at the April or May meeting of the society. Contestants must reside in Cook County and be preparing for a surgical career. Members of the society are not eligible for the award but may be co-authors of the manuscript. A preliminary abstract of the work should be submitted to the secretary (Dr. Earl Garside, 5153 N. Clark St., Chicago 40) as soon after Oct. 1 as possible. The work must not have been previously published, but it may be presented at other meetings during the year, after the November meeting of the society, and may be submitted for publication, provided that the publication date is after the May meeting. At the time of presentation of the preliminary abstract the secretary should be informed of plans for other presentations and for publication.

Chicago

Free Lecture Series.—The Museum of Science and Industry, 57th and Lake Michigan, announces the following free lectures, Sundays, 3 p. m.:

Oct. 4, Skin Blemishes and Their Treatment, Herbert Rattner.
Oct. 11, Reducing Can Be Fun, Clifford J. Barborka.
Oct. 18, The Successful Marriage, Roland P. Mackay.
Oct. 25, How Old Are You? Morris Fishbein.

Dr. Goldblatt to Lecture at Mount Sinai.—The recently completed research laboratory and professional services building of the Mount Sinai Hospital of Chicago (*J. A. M. A.* **152:**616 [June 13] 1953) will be opened for the medical profession, on Oct. 7, with an open house, beginning at 1:30 p. m. At 4:30 p. m. Dr. Harry Goldblatt, director of laboratories and research, Mount Sinai Hospital, Cleveland, will deliver the dedicatory address "Present Status of the Renal Origin of Essential Hypertension."

INDIANA

Gift to University.—Dr. Goethe Link, Indianapolis, has given to Indiana University, Bloomington, his country home and 49 acres of land adjoining the university's Link Observatory property northwest of Martinsville.

Society News.—Dr. Robert A. Smith, New Castle, has been named president of the Indiana Academy of Ophthalmology and Otolaryngology; Dr. Cecil P. Clark, Indianapolis, president-elect; Dr. Raymond R. Calvert, Lafayette, vice-president; and Dr. John R. Swan, Indianapolis, secretary-treasurer.

Health Forums.—The Vanderburgh County Medical Society and the Evansville *Press* will present a series of free Sunday night public forums on health and medicine in Bosse High School auditorium, Evansville, Oct. 4, 11, 18, and 25, Nov. 1, 8, and 29, and Dec. 6. More than 70 members of the society indicated their willingness to appear on the panels.

Personal.—Dr. Marshall I. Hewitt, South Bend, has joined Parke, Davis & Company, Detroit, where he will be engaged in editing medical literature and other material for the information of physicians.——Dr. Lloyd W. Hisrich has been appointed secretary of the Batesville Board of Health.——Dr.

Dulania S. Wiggins, New Castle, has been named full-time physician for the Indiana Village for Epileptics.——Dr. Roscoe L. Sensenich, South Bend, past president of the American Medical Association and the Indiana State Medical Association, will head the state-wide fund raising drive of the Indiana division of the American Cancer Society.——Dr. Roscoe S. Yegerlehner, Kentland, has been made a member of the Kentland-Jefferson Consolidated School Board.——Dr. James S. McBride, Indianapolis, was honored for 30 years of antituberculosis work at the annual meeting of the Marion County Tuberculosis Association, when he was given the Mary A. Meyers Memorial Award.——Dr. Donald J. Caseley, formerly medical director of the Indiana University Medical Center, has been appointed medical director of St. Luke's Hospital in Chicago.——Dr. John H. Green, North Vernon, is retiring from the practice of medicine to become director of the clinical department at Muscatatuck State School, Butlerville. Dr. Green, who has practiced 42 years in Jennings County, was formerly president of the State Board of Health and has served as both city health officer and county health commissioner.——Dr. Mary Elizabeth Miller Genna, Indianapolis, has been appointed director of the Student-Employe Health Service at Indiana University Medical Center to succeed Dr. Harold N. Johantgen, who has gone into private practice at Shelby, Ohio. Dr. Genna was a member of the Student Health Service staff on the Bloomington campus for the past five years.

MICHIGAN

Triennial Reunion of Alumni.—The fifth triennial reunion of medical alumni of the University of Michigan Medical School and former members of the University Hospital staff will be held in Ann Arbor, Oct. 15-17. There will be a two day scientific session, with clinical conferences, a symposium on poliomyelitis, and other symposiums covering a variety of medical problems; on the third day there will be a special convocation of the medical school in the morning, and the Michigan-Northwestern football game in the afternoon. Details may be obtained from Dean Albert C. Furstenberg, 123 West Medical Building, University of Michigan, Ann Arbor. Headquarters for the meeting will be the Horace H. Rackham School of Graduate Studies. Registration fee is $5.

NEW JERSEY

Postgraduate Courses.—The Passaic County Medical Society is sponsoring a series of Friday lectures (4-6 p. m.) on office proctology, with Dr. Rudolph V. Gorsch, adjunct professor of proctology, New York Polyclinic Medical School and Hospital, as lecturer. A course in cardiology for general practitioners is offered on Tuesdays (4-6 p. m.). Courses will be held in the society building, 625 Broadway; fee, $50 per course. Details may be had from Dr. Wayne W. Hall, 515 Broadway, Paterson.

Dr. Bunnell to Give Albee Lecture.—In an all-day program on surgery of the hand, the second Fred H. Albee annual lecture on rehabilitation will be delivered at the Kessler Institute for Rehabilitation, West Orange, on the morning of Oct. 8, by Dr. Sterling Bunnell, San Francisco, who will speak on tendon surgery of the hand. Four panels have been planned for the afternoon. Dr. Edward J. Flynn, Boston, will speak on acute hand injuries (1-2 p. m.); Dr. J. Leonard Goldner, Durham, N. C., on reconstruction of the hand following cerebral palsy and traumatic spastic paralysis (2-3 p. m.); Dr. J. William Littler, New York, on phalangization (3-4 p. m.); and Dr. Jerome Gelb, Newark, on cineplasty in children (4-5 p. m.). Dr. Bunnell will summarize the program at the end of the day. Among the discussants are Drs. Herbert Conway, Emmanuel B. B. Kaplan, Leo Mayer, and Thomas W. Stevenson Jr., New York; Robert H. Clifford III, Detroit, and Henry H. Kessler, Newark, medical director of the institute. The lecture is open to all physicians. Those desiring to attend should communicate with the registrar at the Kessler Institute for Rehabilitation, Pleasant Valley Way, West Orange; ORange 3-6571.

NEW YORK

Reserved Seats for the Orchestral Meetings.—The Buffalo Philharmonic Orchestra Society has advised the Erie County Medical Society that it will reserve seats near the aisle for physicians and hospital personnel holding season tickets for either Sunday afternoon or Tuesday evening performances. Complete call service has been arranged.

Panel on Coronary Artery Disease.—A panel discussion on coronary artery disease will be a feature of the dinner meeting of the Onondago County Medical Society and the Syracuse Academy of Medicine, Oct. 6, at the veterans hospital in Syracuse. At 8:30 p. m., Drs. Walter F. Bugden and John J. Duggan, Syracuse, will speak on cardiovascular surgery. Reservations for dinner, 6 p. m., may be made by phoning Dr. Arthur N. Curtiss, SYracuse, 3-4000.

New York City

Cerebral Palsy Course.—The Columbia University College of Physicians and Surgeons announces a course in cerebral palsy, Oct. 12-23, designed for physicians and occupational and physical therapists. Information may be obtained from Dr. James E. McCormack, Associate Dean, Graduate Studies, College of Physicians and Surgeons, 630 W. 168th St., New York 32.

Medicolegal Lectures.—At a meeting of the clinical society of the New York Polyclinic Medical School and Hospital (345 W. 50th St.), Oct. 5, 8:30 p. m., Dr. Thomas A. Gonzales, chief medical examiner, will present "Medicolegal Investigations and Their Relation to Hospital Practice," and Dr. Alexander S. Wiener, serologist to the office of the chief medical examiner, will talk on "Medicolegal Aspects of Blood Tests." Discussion will be by Dr. Dominick J. Di Maio, director of the department of pathology and bacteriology, New York Polyclinic Medical School and Hospital. Members of the medical profession are cordially invited.

University News.—Dr. J. A. Werner Hetrick, president, New York Medical College, Flower and Fifth Avenue Hospitals, has announced the following appointments to the full-time faculty of the New York Medical College for the current academic year: Dr. Alvin M. Donnenfeld, assistant instructor in obstetrics-gynecology; Dr. Stanley R. Opler, assistant professor of pathology, and Drs. Thomas J. Hartnett and Joseph A. Preston, instructors in pathology; Dr. Irwin P. Train, associate professor of surgery; and Drs. Edward M. Miller, Martin E. Silverstein, and Bernard J. Wattiker, instructors in surgery. Dr. Edward J. Nightingale has been appointed student health officer and associate and assistant physician in the department of medicine.

OHIO

Narcotic Violation.—Dr. Walter C. Scheidt, Van Wert, pleaded *nolo contendere* in the U. S. District Court at Cleveland to a charge of violating the federal narcotic law, and on June 30, received a probationary sentence for a period of 18 months.

Cardiac Research.—The Central Ohio Heart Association, 30 E. Broad St., Columbus, has allocated $44,821.55 for research in the causes and treatment of heart disease and $11,800 for fellowships in cardiology. Work on these projects will be conducted at Ohio State University, University Hospital Heart Station, Ohio State Tuberculosis Hospital, and Children's Hospital, Columbus, and at Marion City Hospital and Frederick C. Smith Clinic, Marion.

PENNSYLVANIA

Cancer Program.—The ninth annual meeting and training school of the Pennsylvania division, American Cancer Society, which will be held at the Bedford Springs Hotel in Bedford, Oct. 9-11, offers the following program on Saturday morning:

Diagnosis and Management of Tumors of the Liver, George T. Pack, New York.

Modern Radical Radiotherapy of Cancer of the Cervix, Gilbert H. Fletcher, Houston, Texas.

End Results of Plastic Procedures in Tumors, S. Milton Dupertuis, Pittsburgh.

SOUTH DAKOTA

Medical Licensure.—The South Dakota Board of Medical Examiners has announced passage of legislation creating an annual registration fee of $2 for licenses in that state, effective Jan. 1, 1954. Physicians licensed in South Dakota who wish to maintain that license by payment of the registration fee should contact the South Dakota Board of Medical Examiners, 300 First National Bank Building, Sioux Falls.

TENNESSEE

Dr. Whitacre Goes to Nashville.—Dr. Frank E. Whitacre, chief of the division of obstetrics and gynecology at the University of Tennessee College of Medicine, Memphis, since July 1, 1945, has resigned in order to accept a similar position at the Vanderbilt University School of Medicine in Nashville. Dr. Whitacre served as house officer, instructor, and assistant professor at the University of Chicago from 1930 to 1938. He later joined the staff of the Rockefeller Foundation's medical college in Peiping, China, as professor of obstetrics and gynecology and head of the department and spent two years in a concentration camp in Manila after the Japanese invasion.

Postgraduate Courses.—The postgraduate department of the University of Tennessee Medical Units, Memphis, offers the following postgraduate courses: (1) Oct. 21-23, obstetrics and gynecology (John Gaston Hospital, teaching facility of the college of medicine), under the direction of the division of obstetrics and gynecology; (2) Nov. 4-6, pediatrics (Le Bonheur Children's Hospital), under direction of Dr. F. Thomas Mitchell, professor of pediatrics of the university and chief-of-staff at the hospital; (3) Nov. 18-20, cardiovascular diseases (Institute of Pathology), under direction of the division of medicine of the university. All courses will be limited to 20 physicians. Information may be obtained from the postgraduate department of the university, 4 S. Dunlap, Memphis.

WASHINGTON

Sickness Survey.—The Washington State Medical Association has announced results of its first sickness survey, held Jan. 20, and cosponsored by the University of Washington medical department, Seattle. Diseases of the respiratory system accounted for 17.4% of all visits by physicians; 17.5% of the visits (the largest group numerically) were not specifically related to sickness but were for prenatal and postnatal care, physical examinations, immunizations, etc. The third ranking cause for visits was fractures, sprains, and other externally caused damage to the locomotor system. The state association plans to repeat the survey four times during the year to allow for seasonal variation.

Dr. Wangensteen to Give the Strauss Lecture.—The department of surgery of the University of Washington School of Medicine, Seattle, will sponsor the annual Alfred A. Strauss lecture, Oct. 30, 8:15 p. m., in the Health Sciences Building, University of Washington campus. Dr. Owen H. Wangensteen, professor of surgery, University of Minnesota School of Medicine, Minneapolis, will speak on "Esophageal Aspects of the Peptic Ulcer Problem." The lecture is open to physicians and all other persons in the field of medicine. Dr. Wangensteen's book, "Intestinal Obstructions," received the Samuel D. Gross prize in 1935. The Seattle Surgical Society will give a dinner at the Ranier Club in honor of Dr. Wangensteen before the lecture.

WISCONSIN

Dr. Dailey Day.—The Elcho Community recently honored Dr. Paul J. Dailey on his 65th birthday with a parade, a picnic, a baseball game between the Elcho Cardinals and "Dr. Dailey's babies," and a dinner at the Muskie Inn Hotel. Dr. Dailey has practiced in Elcho for 40 years, has served for 27 years as president of the school board, and has been president of the Elcho State Bank since 1938. He is the town's health officer. His son, Dr. Dee W. Dailey, joined him in practice in 1946.

Course in Cardiology.—The University of Wisconsin Medical School, Madison, announces that a postgraduate course, entitled "Cardiologic Principles in General Practice," will be given Oct. 20-22, at Wisconsin General Hospital, Madison, under the direction of Dr. Herman H. Shapiro, associate professor of clinical medicine. Small group instruction in the reading of electrocardiograms, orthodiagrams, and in cardiologic diagnosis will be included. Symposiums will be held Tuesday, 2:30 p. m., on diagnosis and treatment of congenital heart disease and Thursday, 3:30 p. m., on diagnosis and treatment of uremia. The course will be limited to 20 registrants. Fee is $20, $5 of which must be sent with application to Dr. Robert C. Parkin, University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6.

Dr. Miale Goes to Florida.—Dr. John B. Miale, director of laboratories for St. Joseph's Hospital, Marshfield, since 1946, has been appointed professor of clinical pathology at the University of Miami School of Medicine, Coral Gables, Fla., and will also serve as clinical pathologist at Jackson Memorial Hospital (University Hospital) in Miami, Fla. Dr. Miale has been affiliated with Cornell University Medical College and Brady Urological Institute, New York Hospital, New York; University of North Carolina School of Medicine in Chapel Hill; Strong Memorial-Rochester Municipal Hospitals, Rochester, N. Y.; and Watts Hospital, Durham, N. C. In 1951 he received the annual Sheard-Sanford award of $5,000 from the American Society of Clinical Pathologists for a paper entitled "The Role of Coagulase—Globulin in Normal and Abnormal Coagulation."

GENERAL

Isotope Catalog.—A new catalog of isotopes, both radioactive and stable, produced by Oak Ridge (Tenn.) National Laboratory is now available. The catalog replaces an edition published by the Atomic Energy Commission in March, 1951. More than 100 radioactive and 175 stable isotopes are listed in the new catalog, together with prices and descriptive material. The catalog, at $1 per copy, or information about ORNL-produced radioisotopes may be obtained by writing to Carbide and Carbon Chemicals Company, Oak Ridge National Laboratory, Radioisotope Sales Department, Post Office Box P, Oak Ridge, Tenn.

Award for Research on Infertility.—The American Society for the Study of Sterility announces the 1954 contest for the most outstanding contribution to the subject of infertility and sterility. The winner will receive a cash award of $1,000, and the essay will appear on the program of the 1954 meeting of the society. Essays submitted must be received not later than March 1, 1954, and should be accompanied by (1) a separate sheet of paper bearing a short biographical sketch of the author and (2) a photograph. For details address the American Society for the Study of Sterility, % Dr. Herbert H. Thomas, Secretary, 920 S. 19th St., Birmingham, Ala.

Meeting of Plastic Surgeons.—The American Otorhinologic Plastic Surgery Society, Inc., will hold its annual meeting at the Hotel Morrison, Chicago, Oct. 11, under the presidency of Dr. Harry Neivert, New York. The general membership meeting, 5:30 p. m., will be followed by cocktails and dinner, 7 p. m. The scientific program, 8 p. m., will open with the invitational address, "Operation—Face Lift," by Dr. John F. Pick, Chicago. Dr. James B. Brown, St. Louis, will present, by invitation, "Possibilities and Limitations in Plastic Surgery of the Nose," which will be followed by the round-table discussion, "Rhinoplastic Surgical Problems," at which Dr. Brown will be an honorary guest and Dr. Samuel F. Kelley, New York, will serve as moderator.

International Council of Pharmacologists.—At a meeting open to all pharmacologists attending the International Physiological Congress in Montreal, Canada, it was decided that a council of seven members from seven different nations should be established (1) to look after the interests of the pharmacologists in future international congresses, (2) to explore the possibility and desirability of affiliating with the newly formed

International Union of Physiological Sciences, (3) to collect and distribute information about the activities of pharmacological organizations, and (4) to perform such other functions as might seem necessary and advisable. Council members were elected from Italy, England, Belgium, Denmark, Switzerland, Germany, and the United States. Dr. Carl F. Schmidt, Philadelphia, was named secretary of the group, which adopted the name International Council of Pharmacologists.

Pathologists' Meeting in Chicago.—The annual meeting of the College of American Pathologists will be held at the Drake Hotel, Chicago, Oct. 12-13. Dr. Robert A. Moore, St. Louis, will serve as moderator for the panel discussion, "Methods and Policies of Teaching Pathology to Undergraduate Students," Monday, 10:15 a. m. Dr. Israel Davidsohn, Chicago, will be moderator for the panel discussion, "Training of Residents in Clinical Pathology," 3-5 p. m. This presentation will be followed by a fellowship hour, 5 p. m. Tuesday will be devoted to a "Symposium on Blood Bank Methodology," for which Dr. Donald H. Kaump, Detroit, will serve as moderator. Question and answer period panels will be held at 11:10 a. m. and 3:35 p. m. A fellowship hour in the grand ballroom, 6:30 p. m., will precede the banquet in the Gold Coast room.

Urologists Meet in Cincinnati.—The annual meeting of the North Central Section, American Urological Association, will be held in Cincinnati, Oct. 8-10. Honorary guest speaker will be Dr. George F. Cahill, New York, who will discuss "Adrenal Tumors." The following basic science lectures, by invitation, will be delivered: "The Use of Radioactive Isotopes in Medicine" by Otto Glasser, Ph.D., Cleveland; "Electromyography in the Study of the Urinary Bladder" by Edward L. Corey, Ph.D., Charlottesville, Va.; and "Basic Endocrinology of Man, Testicular Deficiency" by Dr. Alexander Albert, Rochester, Minn. A panel discussion, entitled "Newer Diagnostic Methods in Urology," by invitation, will be moderated by Dr. James C. Sargent, Milwaukee, with Drs. Edgar A. Webb, Minneapolis, Arthur T. Evans, Cincinnati, James W. Merricks, Chicago, and Eugene F. Poutasse, Cleveland, as collaborators.

Grants for Cancer Research.—Applications for grants for scholars in cancer research are being accepted by the Committee on Growth of the National Research Council, acting for the American Cancer Society. These awards are designed to bridge the gap between the completion of fellowship training and the period when the young scientist has thoroughly demonstrated his competence as an independent investigator. A grant of $18,000, payable over three years, will be made to each scholar's institution as a contribution toward his support, his research, or both. These grants are not restricted to the support of persons who have held American Cancer Society fellowships. Applications should be submitted by institutions on behalf of a candidate before Jan. 1, 1954. Information may be obtained from the Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Ave., N.W., Washington 25, D. C.

Association of American Physicians and Surgeons.—The annual meeting of the Association of American Physicians and Surgeons will be held at the LaSalle Hotel, Chicago, Oct. 8-10. An address of welcome will be delivered by Dr. Walter C. Bornemeier, president, Chicago Medical Society. On Friday, 10:25 a. m., Dr. Lewis A. Alesen, Los Angeles, immediate past president of the California Medical Association, will have as his topic "Is the Trend Reversed?" The Hon. John W. Bricker, U. S. Senator from Ohio, will speak at the banquet Friday, 7 p. m. Other guest speakers include the Honorable Carl T. Curtis, U. S. Representative from Nebraska, the Honorable Ralph W. Gwinn, U. S. Representative from New York, Mr. Kenneth McFarland, Topeka, Kan., educational consultant to General Motors, and Mr. Arthur L. Conrad, Chicago, president, the Heritage Foundation. Tickets for the president's luncheon ($3.50) may be obtained at the registration desk before Thursday noon and reservations for the banquet ($6.50) before 10 a. m. Friday.

Gastroenterologists Meet in Los Angeles.—The annual convention of the National Gastroenterological Association will be held at the Biltmore Hotel, Los Angeles, Oct. 12-14 under the presidency of Dr. Felix Cunha, San Francisco. Dr. Cunha will preside over the first session, Monday morning, which will be devoted to a symposium on cirrhosis of the liver. Tuesday, 9 a. m., Dr. Lynn A. Ferguson, Grand Rapids, Mich., will serve as moderator for a panel discussion on diagnosis and management of disease of the large bowel, and Tuesday afternoon a panel discussion on peptic ulcer will be presented by three invited speakers, Drs. Stephen J. Stempien, Beverly Hills, Calif., Joseph A. Weinberg, Long Beach, Calif., and Garnett Cheney, San Francisco. The sessions will close with a panel discussion Wednesday, 4:25 p. m., on latest developments in cancer of the gastrointestinal tract, which will be moderated by Dr. William C. Boeck, Los Angeles, by invitation. The president's annual reception will be held Monday, 7:30 p. m., under the sponsorship of Winthrop-Stearns, Inc. Admission is by card only, to be obtained at the convocation ceremony, Monday, 6 p. m. The annual banquet is scheduled for Tuesday, 7 p. m. A course in postgraduate gastroenterology will be held Oct. 15-17.

Professional Color Television Broadcasters.—The American Cancer Society, in conjunction with the Columbia Broadcasting System TV network, will produce during 1953-1954 a series of 30 closed-circuit one-hour color television programs for physicians in general practice. The series will be viewed by practitioners in Boston, Philadelphia, Pittsburgh, Detroit, Toledo, and New York, with the possibility that other cities will be added as the series progresses. All programs will originate in New York, from the Columbia-Presbyterian Medical Center and from the Memorial Center for Cancer and Allied Diseases. The tentative starting date for the series is Oct. 21, 5-6 p. m., from a studio in Frances Delafield Hospital at Columbia. Programs will be broadcast on alternate Wednesdays up to Dec. 2, after which they will be presented weekly. Each program will be viewed at the receiving end on the new giant color television projection screen, demonstrated publicly for the first time at the recent A. M. A. meeting in New York. In the New York area, the receiver will be located at the New York Academy of Medicine (Hosack Hall). It is estimated that about 3,000 physicians will view the programs as they are telecast. The programs will be color kinescoped, and the kinescopes will ultimately be made available to local medical societies through regional and state offices of the American Cancer Society.

Trudeau-Saranac Consolidation.—The board of trustees of Trudeau Sanatorium, Trudeau, N. Y., recently voted to merge the activities of the Trudeau Sanatorium (the parent corporate body), the Edward L. Trudeau Foundation (a fund established to assist in carrying out the research program of the entire Trudeau organization) and the Saranac Laboratory (one of the research laboratories of the Trudeau organization, which will continue to function under that name), under one administrative organization, with Dr. Gordon M. Meade, formerly medical director of Trudeau Sanatorium, as executive director. This change was made in the interest of uniformity of objectives and increased efficiency of operation. Word of the reorganization has led to erroneous reports that the work of the Saranac Laboratory and other Trudeau laboratories in the field of pulmonary diseases of industrial origin would be discontinued. The board of trustees states that it not only intends to continue research and teaching in the fields of tuberculosis and pulmonary diseases of industrial origin but hopes to expand the work in the latter field. Pending appointment of a successor to Dr. Arthur J. Vorwald, director of the Saranac Laboratory who resigned July 1, work of the laboratory continues under the supervision of Dr. Philip C. Pratt.

A pamphlet, entitled "Answers to Questions from Physicians About Trudeau Sanatorium," was recently prepared to bring physicians up-to-date on the sanatorium, which will celebrate its 70th anniversary next year. Copies of the pamphlet may be had on request to Dr. Roger S. Mitchell, Clinical Director, Trudeau Sanatorium, Trudeau, N. Y.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories, and possessions in the weeks ended as indicated:

Area	Sept. 19, 1953 Paralytic Type	Sept. 19, 1953 Total Cases Reported	Sept. 20, 1952 Total
New England States			
Maine	15	26	9
New Hampshire	..	1	4
Vermont	4	8	3
Massachusetts	21	47	35
Rhode Island	13	28	9
Connecticut	8	23	27
Middle Atlantic States			
New York	66	236	177
New Jersey	23	55	58
Pennsylvania	..	114	152
East North Central States			
Ohio	42	198	283
Indiana	..	53	152
Illinois	60	139	424
Michigan	60	142	260
Wisconsin	..	47	223
West North Central States			
Minnesota	49	179	388
Iowa	9	41	202
Missouri	8	51	85
North Dakota	3	14	21
South Dakota	..	10	87
Nebraska	4	8	209
Kansas	2	35	180
South Atlantic States			
Delaware	2	3	7
Maryland	23	43	19
District of Columbia	1	3	8
Virginia	15	36	47
West Virginia	14	29	42
North Carolina	13	30	27
South Carolina	1	6	13
Georgia	5	21	29
Florida	12	40	30
East South Central States			
Kentucky	4	8	151
Tennessee	7	15	44
Alabama	6	11	18
Mississippi	..	3	39
West South Central States			
Arkansas	9	16	19
Louisiana	7	10	33
Oklahoma	6	21	87
Texas	22	72	117
Mountain States			
Montana	12	25	15
Idaho	..	4	16
Wyoming	..	3	10
Colorado	4	9	53
New Mexico	..	8	25
Arizona	4	11	16
Utah	..	11	15
Nevada	..	3	..
Pacific States			
Washington	..	38	88
Oregon	10	19	27
California	107	205	196
Territories and Possessions			
Alaska	..	..	..
Hawaii	..	..	2
Puerto Rico	..	..	..
Total	666	2,158	4,181

Anesthesiologists Meet in Seattle.—The American Society of Anesthesiologists will hold its annual meeting at the Olympic Hotel, Seattle, Oct. 5-9, under the presidency of Dr. Ralph T. Knight, Minneapolis. Dr. John S. Lundy, Rochester, Minn., will serve as moderator at a panel discussion entitled "What Part Can the Anesthesiologist Play in Civil Defense," which will be presented at a 12:30 p. m. luncheon meeting Thursday in the Georgian Room. Participants include Drs. Jesse Allen and Frank L. Cole, San Francisco, Dr. Joel W. Baker, Dr. Quin B. DeMarsh, Dr. Frank J. Leibly, Dr. Frederic C. Moll, and Rear Adm. James R. Fulton (MC) USN, Seattle, Vice Adm. Daniel E. Barbey, USN (Ret.), Dr. John A. Kahl, Seattle, and Dr. Melvin A. Casberg, Washington, D. C. At the Friday luncheon in the Georgian Room Dr. Robert W. Virtue, Denver, will be moderator for a panel discussion on circulatory problems associated with anesthesia. Participants will be Drs. Frederick H. Van Bergen, Minneapolis, Benjamin E. Etsten Boston, Fiorindo A. Simeone, Cleveland, and Earl H. Wood, Rochester, Minn. In addition to these presentations 46 papers will be read. On Oct. 5-6, 78 refresher courses will be conducted on the mezzanine floor. On Wednesday evening will be the first showing, 6 p. m., in the Olympic Bowl, of the motion picture "Intravenous Anesthesia with Barbiturates," produced through the cooperation of the American Society of Anesthesiologists and the American College of Surgeons and sponsored by Abbott Laboratories. Members, wives, and guests are invited. Thursday there will be a dinner dance in the Georgian Room, when the distinguished service award will be presented to Dr. Henry S. Ruth, Haverford, Pa. The guest speaker, Dr. Enrico Ciocatto, professor of anesthesiology, University of Turin, Italy, who will be introduced by Dr. John J. Bonica, Tacoma, Wash., will speak on "Our Method of Selective Analgesia Block for the Therapy of Intractable Pains." Dr. Ciocatto will also conduct two refresher courses.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1953 Clinical Meeting, St. Louis, Dec 1-4.
1954 Annual Meeting, San Francisco, June 21-25.
1954 Clinical Meeting, Miami, Florida, Nov. 30-Dec. 3.
1955 Annual Meeting, Atlantic City, N. J., June 6-10.
1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

AMERICAN ACADEMY FOR CEREBRAL PALSY, Western Hills Hotel, Fort Worth, Texas, Oct 30-31. Dr. Harry E. Barnett, 116 S. Michigan Blvd., Chicago 3, Secretary.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, Palmer House, Chicago, Oct. 12-16. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Municipal Auditorium, Miami, Fla., Oct. 6-9. Dr. E. H. Christopherson, 610 Church St., Evanston, Ill., Secretary.

AMERICAN ACADEMY OF TROPICAL MEDICINE, Brown Hotel, Louisville, Ky., Nov. 12-14. Dr. E. Harold Hinman, University of Puerto Rico, School of Medicine, San Juan 22, P. R., Secretary.

AMERICAN ASSOCIATION OF BLOOD BANKS, LaSalle Hotel, Chicago, Oct. 17-20. Miss Marjorie Saunders, 3500 Gaston Ave., Dallas 4, Texas, Secretary.

AMERICAN ASSOCIATION OF MEDICAL CLINICS, Congress Hotel, Chicago, Oct. 9-11. Dr. Edwin P. Jordan, P. O. Box 114, Charlottesville, Va., Executive Director.

AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, Palace Hotel, San Francisco, Oct. 5-9. Miss Doris Gleason, 510 N. Dearborn St., Chicago 10, Executive Secretary.

AMERICAN CANCER SOCIETY, New York, Nov. 2-6. Dr. Charles S. Cameron, 47 Beaver St., New York 4, Medical Director.

AMERICAN CLINICAL AND CLIMATOLOGICAL ASSOCIATION, The Homestead, Hot Springs, Va., Nov. 2-4. Dr. Marshall N. Fulton, 124 Waterman St., Providence 6, R. I., Secretary.

AMERICAN COLLEGE OF CARDIOLOGY, Hotel Statler, Cleveland, Ohio, Nov. 6-7. Dr. Philip Reichert, 480 Park Ave., New York 22, Secretary.

AMERICAN COLLEGE OF SURGEONS, Conrad Hilton Hotel, Chicago, Oct. 5-9. Dr. Michael L. Mason, 40 East Erie St., Chicago, Secretary.

AMERICAN FRACTURE ASSOCIATION, Mission Inn, Riverside, Calif., Oct. 12-15. Dr. H. W. Wellmerling, 120 S. LaSalle St., Chicago 3, Secretary.

AMERICAN OTORHINOLOGIC SOCIETY FOR PLASTIC SURGERY, Morrison Hotel, Chicago, Oct. 11. Dr. Louis J. Feit, 66 Park Ave., New York, Secretary.

AMERICAN PUBLIC HEALTH ASSOCIATION, Hotel New Yorker and Hotel Statler, New York, Nov. 9-13. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

AMERICAN SCHOOL HEALTH ASSOCIATION, Hotel New Yorker, New York, Nov. 9-13. Dr. A. O. DeWeese, 515 East Main St., Kent, Ohio, Secretary.

AMERICAN SOCIETY OF ANESTHESIOLOGISTS, Olympic Hotel, Seattle, Oct. 6-9. Dr. J. Earl Remlinger Jr., Room 1101, 188 W. Randolph St., Chicago, Secretary.

AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS, Drake Hotel, Chicago, Oct. 12-16. Dr. Clyde G. Culbertson, 1040 W. Michigan St., Indianapolis, Secretary.

American Society for the Study of Arteriosclerosis, Hotel Knickerbocker, Chicago, Nov. 1-2. Dr. O. J. Pollak, P. O. Box 228, Dover, Del., Secretary.

American Society of Tropical Medicine and Hygiene, Brown Hotel, Louisville, Ky., Nov. 12-14. Dr. John E. Larsh Jr., University of North Carolina, School of Public Health, Chapel Hill, N. C., Secretary.

Association of American Medical Colleges, Hotel Claridge, Atlantic City, N. J., Oct. 26-28. Dr. Dean F. Smiley, 185 N. Wabash Ave., Chicago 1, Secretary.

Association of Life Insurance Medical Directors of America, Hotel Statler, New York, Oct. 14-16. Dr. Henry B. Kirkland, P. O. Box 594, Newark 1, N. J., Secretary.

Association of Medical Illustrators, Sheraton Hotel, Baltimore, Oct. 5-7. Miss Evelyn J. Erickson, 1512 St. Antoine St., Detroit 26, Secretary.

Association of Military Surgeons of the United States, Hotel Statler, Washington, D. C., Nov. 8-11. Dr. R. R. Sayers, Armed Forces Institute of Pathology, Washington 25, D. C., Secretary.

Association of State and Territorial Health Offcers, Washington Hotel, Washington, D. C., Nov. 4-7. Dr. John D. Porterfield, 306 Ohio Depts. Bldg., Columbus 15, Ohio, Secretary.

Central Association of Obstetricians and Gynecologists, The Shamrock, Houston, Texas, Nov. 5-7. Dr. Harold L. Gainey, Suite 602, 116 South Michigan Ave., Chicago 3, Secretary.

Central Neuropsychiatric Association, Claypool Hotel, Indianapolis, Oct. 15-17. Dr. Hamilton Ford, 112 North Blvd., Galveston, Texas, Secretary.

College of American Pathologists, Drake Hotel, Chicago, Oct. 12-16. Dr. Harry P. Smith, 203 N. Wabash Ave., Chicago 1, Secretary.

Constantinian Society, Battery Park Hotel, Asheville, N. C., Oct. 18-21. Dr. C. F. Shook, Medical Director, Owens-Illinois Glass Company, Toledo 1, Ohio, Secretary.

Delaware, Medical Society of, Hotel du Pont, Wilmington, Oct. 12-14 Dr. Andrew M. Gehret, 822 North American Bldg., Secretary.

District of Columbia, Medical Society of the, Hotel Statler, Washington, Oct. 5-7. Mr. Theodore Wiprud, 1718 M St. N.W., Washington 6, Secretary.

Gulf Coast Clinical Society, Admiral Semmes Hotel, Mobile, Ala., Oct. 15-16. Dr. William J. Atkinson Jr., 1217 Government St., Mobile 20, Ala., Secretary.

Indiana State Medical Association, French Lick, Oct. 19-21. Mr. James A. Waggener, 23 E. Ohio St., Indianapolis 4, Executive Secretary.

Interstate Post Graduate Medical Association of North America, Palmer House, Chicago, Nov. 2-5. Dr. E. R. Schmidt, 1300 University Ave., Madison 5, Wisconsin, Secretary.

Inter-Society Cytology Council, Philadelphia, Nov. 19-20. Dr. Paul F. Fletcher, 634 North Grand Blvd., St. Louis 3, Secretary.

Midwestern Section of American Federation for Clinical Research, Congress Hotel, Chicago, Oct. 29. Dr. Robert J. Glaser, 600 S. Kingshighway Blvd., St. Louis 10, Secretary.

National Association for Mental Health, New York, Nov. 17-19. Dr. George S. Stevenson, 1790 Broadway, New York 19, Medical Director.

National Gastroenterological Association, Hotel Biltmore, Los Angeles, Oct. 12-17. Dr. A. Xerxes Rossien, 1819 Broadway, New York 23, Secretary.

National Proctologic Association, Congress Hotel, Chicago, Oct. 15-17. Dr. George E. Mueller, 59 East Madison St., Chicago 2, Secretary.

National Society for Crippled Children and Adults, Palmer House, Chicago, Nov. 12-14. Mr. Lawrence J. Linck, 11 South LaSalle St., Chicago 3, Secretary.

New England Obstetrical and Gynecological Society, Hotel Somerset, Boston, Oct. 28. Dr. Carmi R. Alden, 270 Commonwealth Ave., Boston, Secretary.

New Hampshire Medical Society, Equinox House, Manchester, Vt., Oct. 4-6. Dr. Deering G. Smith, 44 Chester St., Nashua, Secretary.

North Pacific Surgical Association, Victoria, B. C., Nov. 20-21. Dr. John A. Duncan, 509 Olive Way, Seattle, Secretary.

Oklahoma City Clinical Society, Oklahoma City, Oct. 26-29. Miss Alma F. O'Donnell, 512 Medical Arts Bldg., Oklahoma City 2, Executive Secretary.

Omaha Mid-West Clinical Society, Hotel Paxton, Omaha, Oct. 26-30. Miss Irene Rau, 1031 Medical Arts Bldg., Omaha 2, Executive Secretary.

Oregon State Medical Society, Heathman Hotel, Portland, Oct. 14-17. Dr. Charles E. Littlehales, 833 S.W. Eleventh Ave., Portland 5, Secretary.

Regional Meetings, American College of Physicians:

Western New York, Syracuse, Oct. 9. Dr. E. C. Reifenstein, 109 South Warren St., Syracuse 2, Governor.

Ohio, Dayton, Oct. 9. Dr. Charles A. Doan, Ohio State University College of Medicine, Columbus 10, Governor.

Midwest—Ill., Ind., Iowa, Minn., Wis.—Hotel Schroeder, Milwaukee, Nov. 21. Dr. Francis D. Murphy, 536 West Wisconsin Ave., Milwaukee 3, Chairman.

Montana-Wyoming, Missoula, Mont., Oct. 9-10. Dr. Harold W. Gregg, 127 West Park Street, Butte, Mont., Governor.

New England—Conn., Maine, Mass., N. H., R. I., Vt.—Hartford, Conn., Oct. 28. Dr. John C. Leonard, 80 Seymour St., Hartford 15, Conn., Chairman.

New Jersey, Trenton, Nov. 4. Dr. Edward C. Klein Jr., 73 Lincoln Park, Newark 2, Governor.

Southeastern—Cuba, Alabama, Florida, Georgia, South Carolina—St. Simons, Sea Island, Ga., Oct. 16-17. Dr. Carter Smith, 384 Peachtree St. N.E., Atlanta 3, Ga., Chairman.

Regional Meetings, American Rheumatism Association:

Ohio and Western Pennsylvania, Mayflower Hotel, Akron, Ohio, Nov. 11. Dr. Roger Q. Davis, 1405 Goodyear Blvd., Akron 5, Ohio, Chairman.

Southern Medical Association, Municipal Auditorium, Atlanta, Ga., Oct. 26-29. Mr. C. P. Loranz, 1020 Empire Bldg., Birmingham 3, Ala., Secretary.

Southwestern Medical Association, Pioneer Hotel, Tucson, Ariz., Oct. 29-31. Dr. C. C. Stapp, 800 Montana St., El Paso, Texas, Secretary.

Vermont State Medical Society, Equinox House, Manchester, Oct. 4-6. Dr. James P. Hammond, 542 Main St., Bennington, Secretary.

Virginia, Medical Society of, Hotel Roanoke, Roanoke, Oct. 18-21. Mr. Robert I. Howard, 1105 W. Franklin St., Richmond 20, Executive Secretary.

Western Orthopedic Association, Sun Valley, Idaho, Oct. 5-8. Dr. Forrest L. Flashman, 1301 Spring St., Seattle 4, Secretary.

Wisconsin, State Medical Society of, Hotel Schroeder, Milwaukee, Oct. 5-8. Mr. Charles H. Crownhart, 709 East Gorham St., Madison 3, Secretary.

FOREIGN

Association of Surgeons of Great Britain and Ireland, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

Canadian Medical Association, Vancouver, B. C., Canada, June 18-22, 1954. Dr. T. C. Routley, 135 St. Clair Ave. W., Toronto 5, Ont., Canada, General Secretary.

Congress of International Anesthesia Research Society, Chateau Frontenac, Quebec, Canada, October 26-29. Dr. A. William Friend, 515 Nome Ave., Akron 20, Ohio, Chairman, Program Committee.

International Cancer Congress, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

International Conference on Thrombosis and Embolism, Basle, Switzerland, July 15-19, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

International Congress on Group Psychotherapy, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

International Congress of Hydroclimatism and Thalassotherapy, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni Venac 1, Belgrade, Yugoslavia, Secretary General.

International Congress of International College of Surgeons, Sao Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

International Congress on Mental Health, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

International Congress on Obstetrics and Gynecology, Geneva, Switzerland, July 26-31, 1954. Dr H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

International Congress of Ophthalmology, Montreal, Canada, Sept. 10-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 13-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minnesota, U. S. A., Secretary-General.

International Congress of Orthopedic Surgery and Traumatology, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

International Congress of Paediatrics, Havana, Cuba, Oct. 12-17. Prof. Felix Hurtado, 5a Avenue 124, Miramar, Havana, Cuba, President.

International Congress of Psychology, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

International Congress for Psychotherapy, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

International Gerontological Congress, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

International Leprosy Congress, Madrid, Spain, Oct. 3-10. Dr. Felix Contreras, Moreto 15, Madrid, Spain, Secretary.

International Office of Documentation of Military Medicine, Rome, Italy, Oct. 14-18. Colonel Medecin Prof. A. Campana, Office of the Ministero della Difesa-Esercito, Rome, Italy, Secretary.

International Poliomyelitis Congress, Rome, Italy, Sept. 6-10, 1954. For information write: Mr. S. Henwood, 120 Broadway, New York 5, N. Y., U. S. A.

International Society for Cell Biology, Leiden, Netherlands, Sept. 2-9, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

International Society of Geographical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basle, Switzerland, Secretary-General.

JOURNEES MEDICALES, Paris, France, April 21-25, 1954. For information write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

LATIN AMERICAN CONGRESS OF OBSTETRICS AND GYNECOLOGY, Buenos Aires, Argentina, Oct. 26-31.

LATIN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro, Medico, Caracas, Venezuela, Secretary-General.

PACIFIC SCIENCE CONGRESS, Quezon City and Manila, Philippines, Nov. 16-28. Dr. Patrocinio Valenzuela, College of Pharmacy, University of the Philippines, Quezon City, Philippines, Secretary-General.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, Mexico, D.F., Mexico, Feb. 28-March 4, 1954. Dr. Pedro Hernandez Gonzalo, 8 No. 358, Vedado, Havana, Cuba, General Secretary.

PAN AMERICAN MEDICAL ASSOCIATION, International Medical Cruise Congress, S. S. Nieuw Amsterdam, Jan. 6-22, 1954. Dr. Joseph J. Eller, 745 Fifth Avenue, New York 22, N. Y., U. S. A., Executive Director.

PERSIAN GULF MEDICAL SOCIETY, Dhahran, Saudi Arabia, Dec. 7-8. Dr. N. J. Conan Jr., Department of Internal Medicine, Arabian American Oil Company, Dhahran, Saudi Arabia, Secretary.

REGIONAL MEETING, AMERICAN COLLEGE OF PHYSICIANS, San Juan, Puerto Rico, Oct. 15-17. Dr. R. Rodriquez-Molina, Veterans Administration Center, San Juan, Puerto Rico, Governor.

SECTIONAL MEETING, AMERICAN COLLEGE OF SURGEONS, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

SOUTH AMERICAN CONGRESS OF ANGIOLOGY, Sao Paulo, Brazil, July 1954. For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

WORLD CONGRESS OF INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, The Hague, Netherlands, Sept. 13-17, 1954. For information write: D. C. Schaap, Centrale Vereniging, Apeldoorschweg 51, Arnhem, Netherlands.

WORLD FEDERATION OF OCCUPATIONAL THERAPISTS, Edinburgh, Scotland, August 17, 1954.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 22-24, 1954. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery.

ARIZONA:* *Examination.* Phoenix, Oct. 22-23. *Endorsement.* Phoenix, Oct. 24. Executive Secretary, Mr. Robert Carpenter, 401 Security Bldg., Phoenix.

ARKANSAS:* *Examination.* Little Rock, Nov. 5-6. Sec., Dr. Joe Verser, Harrisburg.

COLORADO:* *Reciprocity.* Denver, Oct. 13. Final date for filing application was Sept. 14. *Examination.* Denver, Dec. 15-16. Final date for filing application is Nov. 14. Executive Secretary, Miss Beulah H. Hudgens, 831 Republic Bldg., Denver 2.

CONNECTICUT:* *Regular. Examination.* New Haven, Nov. 10-11. Reciprocity actions are taken continuously. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic.* Derby, Nov. 10-11. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: Dover, Jan. 12-14, 1954. Sec., Dr. Joseph S. McDaniel, 229 South State St., Dover.

FLORIDA:* *Examination.* Jacksonville, Nov. 22-24. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami 36.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Director of Medical Services, Guam Memorial Hospital, Agana.

HAWAII: Honolulu, Jan. 11-14. *Examination.* Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

IDAHO: Boise, Jan. 11-13, 1954. Executive Secretary, Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: Chicago, Oct. 6-8. Superintendent of Registration, Mr. Fredric B. Selcke, State House, Springfield.

IOWA:* *Examination.* Des Moines, Dec. 7-9. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 9-10. Sec., Dr. O. W. Davidson, 864 New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, Dec. 7-9. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

MARYLAND: *Examination.* Baltimore, Dec. 8-11. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1.

MICHIGAN:* *Examination.* Lansing, Oct. 14-16. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing 8.

MINNESOTA:* Minneapolis, Oct. 20-22. Sec., Dr. E. M. Jones, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Reciprocity.* Jackson, December. Assistant Secretary, Dr. R. Whitfield, Old Capitol, Jackson 113.

MISSOURI: Kansas City, Oct. 22-24. Ex. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct 5. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

NEBRASKA:* *Examination.* Omaha, June 1954. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEVADA:* Reno, Oct. 6. Sec., Dr. George H. Ross, 112 Curry St., Carson City.

NEW JERSEY: *Examination.* Trenton, Oct. 20-23. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO:* Oct. 12-13, Santa Fe. Sec., R. C. Derbyshire, 227 E. Palace Ave., Sante Fe.

NEW YORK: *Examination.* New York, Syracuse, Buffalo and Albany, Oct. 6-9. Sec., Dr. Stiles D. Ezell, 23 South Pearl St., Albany.

NORTH CAROLINA: *Reciprocity.* Asheville, Oct. 12. Sec., Dr. Joseph J. Combs, 716 Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, Jan. 6-9, 1954. *Reciprocity.* Grand Forks, Jan. 9. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, December. *Reciprocity.* Columbus, Oct. 6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

OREGON:* *Reciprocity.* Portland, Oct. 16-17. Sec., Dr. Wilmot C. Foster, 609 Failing Bldg., Portland 4.

PENNSYLVANIA: *Examination.* Philadelphia, January 1954. Acting Secretary, Mrs. Margaret G. Steiner, Box 911, Harrisburg.

SOUTH DAKOTA:* *Examination.* Sioux Falls, Jan. 19-20, 1954. Reciprocity can be obtained at any time between meetings of board. Executive Secretary, Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TEXAS: Fort Worth, Nov. 12-14. Reciprocity applicants must be completed 30 days prior to the meeting date. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination and Reciprocity.* Salt Lake City, Nov. 17. Director, Mr. Frank E. Lees, 314 State Capitol, Salt Lake City 1.

VIRGINIA: *Examination.* Richmond, Dec. 3-5. *Reciprocity.* Richmond, Dec. 2. Address: Board of Medical Examiners, 631 First St. S.W., Roanoke.

VIRGIN ISLANDS: *Examination.* Charlotte Amalie, Nov. 11-12. Sec., Dr. Earle M. Rice, Box 90, St. Thomas.

WEST VIRGINIA: Charleston, Oct. 19. Sec., Dr. N. H. Dyer, State Office Bldg., Charleston 5.

WISCONSIN:* *Reciprocity.* Madison, October 23. *Examination and Reciprocity.* Madison, Jan. 12-14, 1954. Sec., Dr. A. G. Koehler, 46 Washington Blvd., Oshkosh.

WYOMING: Cheyenne, Oct. 5. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARKANSAS: *Examination.* Little Rock, Oct. 6-7. Sec., Mr. Louis E. Gebauer, 1002 Donaghey Bldg., Little Rock.

CONNECTICUT: *Examination.* New Haven, Oct. 10. Address: State Board of Healing Arts, 52 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 19-20. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, Nov. 7. Sec., Mr. M. W. Emmel, Box 340, University of Florida, Gainesville.

IOWA: *Examination.* Des Moines, Oct. 13. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination.* Detroit and Ann Arbor, Oct. 9-10. Sec., Mrs. Ann Baker, 410 W. Allegan St., Lansing.

MINNESOTA: *Examination.* Minneapolis, Oct. 6-7. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis 14.

NEBRASKA: *Examination.* Omaha, Oct. 6-7. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEVADA: *Examination.* Reno, Oct. 6. Sec., Dr. Donald G. Cooney, Box 9005, University Station, Reno.

NEW MEXICO: *Examination.* Santa Fe, Oct. 18. Sec., Mrs. Marguerite Cantrell, Box 1592, Santa Fe.

SOUTH DAKOTA: *Examination.* Vermillion, Dec. 4-5. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TENNESSEE: *Examination.* Memphis, Sept. 23-24. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis 3.

TEXAS: *Examination.* Austin, October 16 and 17. Sec., Bro. Raphael Wilson, 407 Perry-Brooks Bldg., Austin.

WISCONSIN: *Examination.* Madison, Sept. 19. Final date for filing application is Sept. 11. Milwaukee, Dec. 5. Final date for filing application is Nov. 27. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

DEATHS

Moore, John Jay ⊕ Colonel, U. S. Army, retired, San Antonio, Texas; born in Fostoria, Ohio, Nov. 12, 1888; Starling-Ohio Medical College, Columbus, 1912; began his military career in 1917 when he was commissioned a first lieutenant in the regular army; a leading radiologist in the Army, started his work in this field in 1919 and held posts as chief of the x-ray and radium services at Walter Reed Army Hospital, Washington, D. C., Letterman Army Hospital, San Francisco, Gorgas Army Hospital, Panama Canal Zone, Tripler Army Hospital, Honolulu, T. H., and Brooke Army Hospital, Fort Sam Houston, Texas; served as an instructor and head of the x-ray department at the Army Medical School, Washington, D. C.; during World War II commanded the Medical Department Enlisted Technicians' schools at Fort Sam Houston, Texas, and Fort Benjamin Harrison, Ind.; in command of the Medical Department Enlisted Technicians' School at Fitzsimons Army Hospital in Denver, when he was retired for physical disability in September, 1947; member of the American Roentgen Ray Society and the American College of Radiology; fellow of the American College of Surgeons; died in Brooke Army Hospital, Fort Sam Houston, July 31, aged 64, of arteriosclerotic heart disease.

Simmons, Channing Chamberlain ⊕ Newton, Mass.; born in Boston in 1877; Harvard Medical School, Boston, 1899; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; member of the American Surgical Association and the New England Surgical Society, of which he was vice-president in 1934; awarded a bronze medal by the American Cancer Society (Massachusetts Division), Inc., in 1949 in recognition of his important contributions to cancer, and more particularly because as a member of the Massachusetts Division's Committee on Publication had edited the book "Cancer—A Manual for Practitioners"; for many years affiliated with the Massachusetts General Hospital in Boston, where he died Aug. 15, aged 76.

Allen, Abbott William ⊕ Caldwell, N. J.; Columbia University College of Physicians and Surgeons, New York, 1927; certified by the National Board of Medical Examiners; formerly assistant clinical professor of medicine, Post-Graduate Medical School of the New York University-Bellevue Medical Center, New York; died Aug. 1, aged 50.

Bailey, Louis John Carrick ⊕ Greensburg, Pa.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1888; served during World War I; fellow of the American College of Surgeons; on the staff of the Westmoreland Hospital; died July 2, aged 85.

Barron, Oliver Bridges, Hemet, Calif.; Memphis (Tenn.) Hospital Medical College, 1910; on the staff of the Hemet Hospital; member of the board of trustees of the Hemet Public Library; died in Loma Linda (Calif.) Hospital July 2, aged 70, of carcinoma of the colon and stomach.

Beyer, William ⊕ Edgewater, N. J.; New York Homeopathic Medical College and Flower Hospital, New York, 1927; health officer; served during World War II; affiliated with Englewood (N. J.) Hospital, where he died Aug. 20, aged 53, of carcinoma of the stomach.

Billion, Thomas J. ⊕ Sioux Falls, S. D.; John A. Creighton Medical College, Omaha, 1901; specialist certified by the American Board of Internal Medicine; affiliated with McKennan Hospital, where he was first president of the staff and where he died July 8, aged 74, of dissecting aneurysm of the abdominal aorta.

Blanton, Marvin Asbury ⊕ Union City, Tenn.; Vanderbilt University School of Medicine, Nashville, 1903; member of the American Academy of General Practice; on the staff of the Obion County General Hospital; died July 23, aged 74, of coronary thrombosis.

⊕ Indicates Member of the American Medical Association.

Bonathan, Alvin Thomas ⊕ Flint, Mich.; University of Michigan Medical School, Ann Arbor, 1929; member of the American Academy of General Practice; served during World War I; affiliated with St. Joseph, Hurley, and McLaren General hospitals; director of Merchants and Mechanics Bank; died July 28, aged 55, of coronary heart disease.

Brentan, Emanuel ⊕ Albuquerque, N. Mex.; State University of Iowa College of Medicine, Iowa City, 1939; served during World War II; formerly associated with the Indian Service; died Aug. 1, aged 42.

Brooks, LeRoy ⊕ San Francisco; Marquette University School of Medicine, Milwaukee, 1921; fellow of the American College of Surgeons; on the staff of the Franklin Hospital; died Aug. 1, aged 60.

Brown, Thomas Jacob, Washington, D. C.; Howard University College of Medicine, Washington, 1922; died Aug. 8, aged 55, of cerebral accident, hypertension, and cardiorenal disease.

Bugher, Corwin E., Wilmington, Del.; Medical College of Ohio, Cincinnati, 1887; died in the Delaware Hospital June 5, aged 92, of uremia and chronic glomerulonephritis.

Dorminy, James Norwood ⊕ Cordele, Ga.; University of Georgia Medical Department, Augusta, 1896; died in Americus and Sumter County Hospital in Americus Aug. 2, aged 83, of carcinomatosis of neck, gland and chest.

Drake, William Francis ⊕ Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1922; affiliated with Mount Carmel Hospital, where he died July 19, aged 56, of cerebral hemorrhage.

Fisk, Frank Byron ⊕ Indianapolis; Chicago College of Medicine and Surgery, 1913; died in Tarrytown, N. Y., July 10, aged 69, of coronary thrombosis.

Freedman, I. Val ⊕ Phoenix, Ariz.; Chicago College of Medicine and Surgery, 1909; an Associate Fellow of the American Medical Association; member of the Illinois State Medical Society; died in Chicago Aug. 3, aged 71, of coronary occlusion.

Fritz, Clarence Henry ⊕ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1895; died July 29, aged 80, of bronchopneumonia.

Fuchs, Julius ⊕ New York City; Universität Heidelberg Medizinische Fakultät, Baden, Germany, 1912; medical officer in the German Army during World War I; died Aug. 15, aged 65, of carcinoma of the lung.

Gonzalez, Aurelio Andres, Tampa, Fla.; Medical College of the State of South Carolina, Charleston, 1926; died June 13, aged 52, of cerebral hemorrhage and malignant hypertension.

Green, James Henry ⊕ Tupelo, Miss.; Kentucky School of Medicine, Louisville, 1898; affiliated with North Mississippi Community Hospital, where he died July 22, aged 77, of cardiovascular renal disease.

Guterman, Henry Samuel, Chicago; Washington University School of Medicine, St. Louis, 1941; certified by the National Board of Medical Examiners; member of the Endocrine Society; director, department of research in human reproduction at Michael Reese Hospital, where he died Aug. 6, aged 37, of polycystic kidneys.

Hall, Willis ⊕ St. Louis; St. Louis Medical College, 1881; for many years on the faculty of Washington University School of Medicine; an Associate Fellow of the American Medical Association; member of the honorary staff at St. Luke's Hospital; died July 27, aged 96.

Horan, Michael Joseph ⊕ New York City; Medico-Chirurgical College of Philadelphia, 1907; associate clinical professor of surgery at New York Medical College, Flower and Fifth

Avenue Hospitals; associate attending surgeon, Flower and Fifth Avenue Hospital; medical director, House of Caivary Hospital; formerly instructor in surgery at Fordham University College of Medicine; died in St. Vincent's Hospital Aug. 4, aged 75, of myasthenia gravis.

Howe, Julian Menzo ⊕ Washington, D. C.; George Washington University School of Medicine, Washington, 1921; died Aug. 4, aged 57.

Hyde, Harriet Baker, South Harwich, Mass.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900; served on the board of the Cape Cod Hospital in Hyannis; formerly practiced in Greenwich, Conn., where she was a founder of the Greenwich Hospital and where she died Aug. 15, aged 78, of uremia and metastatic adenocarcinoma.

Jacobs, Luster Irvin, Hanna, Okla.; University of Arkansas School of Medicine, Little Rock, 1911; served on the staff of the Henryetta (Okla.) Hospital; died in Henryetta, Okla., Aug. 11, aged 68.

Joslin, Doyle, Yonkers, N. Y.; Harvard Medical School, Boston, 1921; served during World War II; research associate, department of surgery, Cornell University Medical College; died in Agincourt, Ontario, Canada, Aug. 18, aged 58, of coronary thrombosis.

Kerr, Ulysses F., Springfield, Mo.; Barnes Medical College, St. Louis, 1900; county health commissioner from 1924 to 1928; died June 13, aged 84, of coronary sclerosis.

Landau, Benjamin G. ⊕ Surfside, Fla.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; member of the Illinois State Medical Society; died June 10, aged 75, of coronary thrombosis and arteriosclerotic heart disease.

Lewinski, Michael Lewin, Chicago; University of Lemberg, Austria, 1917; died May 16, aged 63.

McGrail, William Chance ⊕ Chicago; Loyola University School of Medicine, Chicago, 1938; served during World War II; on the staff of St. Elizabeth's Hospital; died Aug. 10, aged 43, of coronary occlusion.

McKee, Charles Bradford ⊕ Sacramento, Calif.; George Washington University School of Medicine, Washington, D. C., 1907; died May 29, aged 67, of heart disease and rheumatoid arthritis.

McMahan, Edgar T., Bloomfield, Ky.; Hospital College of Medicine, Louisville, 1898; died July 7, aged 80, of coronary occlusion.

McQueen, Arthur Samuel ⊕ Branford, Conn.; Yale University School of Medicine, New Haven, 1901; in 1918 appointed health officer of the town and borough of Branford and served in this capacity until his death in the New Haven (Conn.) Hospital July 17, aged 79, of cerebral thrombosis, diabetes mellitus, and arteriosclerotic heart disease.

Marsh, Arthur Drought ⊕ Hampton, Conn.; Yale University School of Medicine, New Haven, 1908; served as health officer; died in Bradenton, Fla., recently, aged 66, of cirrhosis of the liver.

Mills, James Fleming, Cincinnati; University of Cincinnati College of Medicine, 1936; served during World War II and was awarded the Distinguished Service Cross; died in the Jewish Hospital Aug. 3, aged 43, of chronic pancreatitis and diabetes mellitus.

Parkin, Edwin Harris, Natick, Mass.; Medico-Chirurgical College of Philadelphia, 1902; died in Boston July 18, aged 77, of cardiovascular arteriosclerosis.

Power, Eugene Logan ⊕ Abbeville, S. C.; University of Virginia Department of Medicine, Charlottesville, 1914; affiliated with Abbeville County Memorial Hospital, where he died Aug. 1, aged 67, of coronary thrombosis.

Presnell, George Rollin ⊕ Kennett, Mo.; St. Louis University School of Medicine, 1937; affiliated with Presnell Hospital in Kennett and St. Mary's Group of Hospitals in St. Louis; died July 31, aged 45.

Quinn, Elwood T. ⊕ Jenkintown, Pa.; College of Physicians and Surgeons, Baltimore, 1910; affiliated with Abington (Pa.) Memorial Hospital, where he died July 28, aged 65.

Risoli, Joseph Edward ⊕ Tewksbury, Mass.; Middlesex University School of Medicine, Waltham, 1943; served as town health officer; affiliated with St. Joseph's and St. John's hospitals in Lowell; died July 30, aged 40, of coronary thrombosis.

Sawyer, Charles Francis ⊕ Twin Falls, Idaho; Northwestern University Medical School, Chicago, 1904; an Associate Fellow of the American Medical Association; member of the Illinois State Medical Society; past president of the Chicago Surgical Society; fellow of the American College of Surgeons; member of the founders group of the American Board of Surgery; professor emeritus of surgery at Loyola University School of Medicine in Chicago; died Aug. 11, aged 75, of coronary thrombosis.

Schirack, John A., Canton, Ohio; Physio-Medical College of Indiana, Indianapolis, 1894; American Medical College, Indianapolis, 1897; Bennett College of Eclectic Medicine and Surgery, Chicago, 1898; died in Mercy Hospital July 21, aged 92, of arteriosclerotic heart disease.

Schlenker, George Henry, Amherst, Wis.; Chicago College of Medicine and Surgery, 1910; served during World War I; died in the Veterans Administration Hospital in Milwaukee July 8, aged 72, of myelogenous leukemia.

Stahl, Earl J., Charleston, W. Va.; Hospital College of Medicine, Louisville, Ky., 1903; died in Mountain State Memorial Hospital July 23, aged 72, of cerebral hemorrhage, hypertension, and arteriosclerosis.

Stuckman, Edwin D. ⊕ New Paris, Ind.; Medical College of Indiana, Indianapolis, 1895; died in Goshen (Ind.) Hospital July 18, aged 84, of carcinoma of the lower esophagus.

Weber, John Joseph ⊕ Pittsburgh; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1917; affiliated with St. Joseph's Hospital, where he died July 29, aged 61, of cerebral hemorrhage.

Williams, Suel Elsworth, Albuquerque, N. Mex.; Ensworth Medical College, St. Joseph, Mo., 1909; died July 20, aged 73, of cerebral hemorrhage.

Wonderlick, Joseph Anthony, Portland, Ore.; University of Oregon Medical School, Portland, 1923; died July 15, aged 67.

DIED WHILE IN MILITARY SERVICE

Brown, Clarence Raymond ⊕ Lieutenant Colonel, U. S. Army, Tupelo, Miss.; born in Tupelo, Miss., March 27, 1912; University of Tennessee College of Memphis, Tenn., 1937; interned at the John Gaston Hospital in Memphis, Tenn.; served a residency at the Walter Reed General Hospital in Washington, D. C., and the Oliver General Hospital in Augusta, Ga.; entered the medical corps of the U. S. Army as a first lieutenant in 1941; became a lieutenant colonel in 1951; served in Europe during World War II; chief, orthopedic section, Percy Jones Army Hospital in Battle Creek, Mich., where he died July 5, aged 41, of coronary occlusion.

Norris, Joseph Esten, Washington, D. C.; born in Washington, D. C., Dec. 5, 1925; University of Chicago School of Medicine, 1949; lieutenant, medical corps, U. S. Naval Reserve; certified by the National Board of Medical Examiners; a naval internship began at the Naval Hospital in Long Beach, Calif., and was completed at the Naval Hospital in San Diego, Calif.; served as medical officer aboard the U. S. S. Burton Island, with the Second Medical Battalion, Second Marine Division, and reported to the Naval Station, Treasure Island, San Francisco, April 25, 1952, where he was serving at the time of his death in the Naval Hospital, Oakland, Calif., June 12, aged 27.

GOVERNMENT SERVICES

NAVY

Medical and Dental Military Symposium.—The Third Medical and Dental Military Symposium will be held at the U. S. Naval Hospital, Chelsea, Mass., Oct. 12-14. Civilian physicians, dentists, nurses, students, military personnel, and any interested members of the allied professions are cordially invited. Among numerous subjects to be discussed will be treatment of anterior poliomyelitis, role of gamma globulin in anterior poliomyelitis, localization of brain tumors by use of radioactive arsenic, dermatological problems in the service, angiocardiography, peritoneal lavage and the artificial kidney, tumors and malignancies of the oral cavity, advances in inhalation therapy, and psychological and physiological relationships in asthma. In addition to service officers, the speakers have been selected largely from the faculties of medical schools and staffs of prominent hospitals in the area. There will be also sections on nursing and hospital administration. Naval reserve officers not on inactive status may obtain one retirement point credit for each day of attendance. Army and Air Force personnel should make arrangements for point credit with their own services. The wearing of uniform by service personnel other than staff is optional.

Training Courses for Naval Reserve Personnel.—Four training courses for male medical department personnel of the Naval Reserve are scheduled to convene during October, November, and December, 1953. The courses are as follows. 1. Insect and Rodent Control: A class is scheduled to convene at the Naval Air Station, Jacksonville, Fla., on the first and third Wednesday of each month. Quotas have been assigned the 1st, 3rd, 4th, 5th, 6th, 8th, and 9th naval districts. 2. Malariology and Insect Control: The Naval Air Station, Alameda, Calif., has scheduled a course in malariology and insect control for Naval Reservists residing in the 11th, 12th, and 13th naval districts. Information may be obtained from the Commanding Officer, Naval Air Station, Alameda, Calif. 3. Amphibious Medicine: The Naval Amphibious Base, Little Creek, Va., has scheduled a course in amphibious medicine to convene on Oct. 5, 1953. The 1st, 3rd, 4th, 6th, 8th, and 9th naval districts have been assigned quotas for this course. 4. Field Medicine: A course in field medicine is scheduled to be conducted at the Marine Corps Base, Camp Pendleton, California, on Oct. 12, 1953, for reserve personnel of the 11th, 12th, and 13th naval districts.

Eligible personnel desiring to attend these courses in a pay status should submit requests to the commandant of their home naval district at the earliest practicable date. Participation in these courses will not increase the possibility of orders to extended active duty.

Course of Instruction.—A course of instruction in medico-military matters will be conducted at the Naval Medical School, Bethesda, Md., Oct. 12-24, 1953. Reserve Medical, Dental, Medical Service, Nurse, and Hospital Corps officers of the 1st, 3rd, 4th, 5th, 6th, 8th, and 9th naval districts, and the Potomac River Naval Command are eligible to attend. During the first week, the medical department of the Navy, the Navy's medical reserve program, and recent advances in military medicine and surgery, including aviation, submarine, and field medicine, will be discussed. Problems confronting medical and dental officers in chemical, bacterial, and radiological warfare, and recommended defensive techniques, will be discussed during the second week.

Reserve medical department officers desiring to attend should submit requests for 14 days' active training duty to their respective commandants at the earliest practicable date. Acceptance of orders to attend this course will not increase the possibility of call to extended active duty.

DEPARTMENT OF DEFENSE

New Institute of Pathology.—The cornerstone for the new Armed Forces Institute of Pathology building will be laid on Oct. 20 at 10 a. m. at the Walter Reed Army Medical Center. Brig. Gen. Elbert DeCoursey, MC, director of the Institute, will preside at the ceremony, and Dr. Melvin A. Casberg, Assistant Secretary of Defense (Health and Medicine) will be the principal speaker. Completion of the building is expected by late spring, 1954, and construction progress, to date, has been on schedule. The building, which will have five stories above ground and three below, is one of the first institutions in Washington designed for resistance to an A-bomb attack.

Concrete blast walls reinforced with steel enclose the main portion of the building. Except for an administrative wing, the entire structure will be windowless. High intensity lighting will be installed throughout the building. Facilities have been

Architect's drawing of the new Armed Forces Institute of Pathology now nearing completion.

planned for a variety of new activities including laboratories for investigative work in histochemistry, cytophysics, historadiobiology, histobacteriology, and virus and tissue culture. Plans also call for rooms to house animals, an x-ray suite, and closed-circuit color television for teaching purposes.

VETERANS ADMINISTRATION

Physicians Wanted at Kerrville, Texas.—Physicians interested in the care of chest diseases are needed at the VA Hospital at Kerrville, Texas, a 450-bed hospital predominantly for the care of tuberculous veterans, located in the hills about 65 miles north of San Antonio. There is an active and progressive inservice educational program for physicians, with nearly every specialty represented in charge of board men. General practitioners are eligible and will be trained if necessary for such positions. The usual VA benefits and perquisites are available, with salaries dependent on qualifications and experience. Inquiries are also solicited from surgeons and eye, ear, nose, and throat specialists.

Personal.—Dr. Rolland R. Gasser, formerly manager of the Veterans Administration Hospital at Framingham, Mass., was appointed manager of the newly remodeled hospital at West Roxbury, Mass., effective August 30. Dr. Gasser will continue as acting manager of the Framingham hospital until the portion of the hospital retained by the Veterans Administration is returned to the Department of the Army. The West Roxbury hospital, formerly a 304-bed general medical and surgical hospital, was closed a little over a year ago for conversion to a paraplegic center. When it is opened, the West Roxbury hospital will have 150 beds devoted to the treatment and care of paraplegic veterans and 150 beds for general medical and surgical patients.

FOREIGN LETTERS

ITALY

Meeting on Internal Medicine.—The eighth convention of the Society of Internal Medicine of the Tuscany and Emilia regions was held in Bologna recently under the chairmanship of Prof. Antonio Gasbarrini, from the university of that city. Prof. Massimo Michelazzi discussed the morphological bases of abnormal circulation. He explained the morphological characteristics of the small vessels and discussed the importance that these may have in the interpretation of many aspects of abnormal circulation. He described the muscle sphincters, the intimal bundles of muscular tissue, and the small polypoid structures found in the small arteries and veins and discussed the arteriovenous anastomoses and the structure and location of the myoepithelioid cells.

Professor Michelazzi spoke also of the general hemodynamic effect of anastomoses, with special reference to the return circulation, and he discussed briefly, as an example of anastomotic circulation, the circulation of the pregnant uterus. Then he reported on the vascular structures of the lung and pointed out the physiological postulates that lead to recognition of the existence of extensive communications between arteries and veins and between the bronchial and pulmonary arterial system. He explained in detail the pathways of the pulmonary circulation and also the various possibilities for and importance of the short circuits from right to left or from left to right. He emphasized the importance of these anatomic features in explaining some aspects of the hemodynamics of the lung, especially in the emphysematous patient, and he discussed a disease that is known in Italy as arteriovenous angiomatosis with hypoxemia. This is a congenital disease due to vascular dysplasia with a particular pulmonary tropism caused by the complex vascular structure of the organ.

On the basis of his personal experience, Professor Michelazzi proved that in bronchitic patients with emphysema some vascular aspects may resemble very closely those of the arteriovenous disease with hypoxemia and could be explained either by the stresses to which the complex pulmonary circulation is subjected or by possible signs of latent vascular dysplasia. On the basis of structural peculiarities, even some aspects of cyanosis could be explained in emphysematous patients as due to a shunt from right to left, and bronchitis due to stasis, pulmonary infarction, and hemorrhages in patients with arterial hypertension could be explained and proved. Prof. Sergio Lenzi, Prof. Luigi Rosa, and Dr. Bardelli read papers after Professor Michelazzi's report.

Roman Society of Surgery.—At a meeting of the Roman Society of Surgery, Feb. 7, under the chairmanship of Professor Paolucci, Dr. Ronchetti reported on a quick method to determine the erythrocyte sedimentation rate. He determined it in patients with tuberculosis and other diseases simultaneously by the method of Westergren and by a quick method by which the reading can be taken after 40 to 60 minutes. The results, which were almost the same with the two methods, suggested the possibility of using the quick method advantageously in the laboratory.

Drs. Parentela and Lucifero spoke of the possibility of a quick treatment of reactions secondary to blood transfusions. They reported their results in 24 patients in whom transfusion or perfusion of fresh whole blood, of a homologous type, was followed by reactions. The reactions disappeared almost entirely a short time after intravenous administration of about 10 cc. of a 25% solution of nikethamide (Coramine).

Dr. Natellis explained a technique for the lyophilization of long arterial segments and demonstrated how he prepared and preserved a 12 cm. segment of aorta. Professor Oselladoro, from Milan, reported on mediastinal goiters and clarified some concepts on the subject. According to him, the term posterior mediastinal goiter that is commonly used is not exact; a definition that would indicate the real location and the true correlations of this pathological entity would be "lateral mediastinal goiter" or better yet "laterovisceral mediastinal goiter." Contrary to modern opinion, the so-called posterior mediastinal goiter is not uncommon. The relations of this goiter to the large vessels of the base of the neck differ fundamentally from those of the anterior mediastinal goiter; the difference is considered with respect to the tracheoesophageal axis according to which the anterior goiter is previsceral whereas the posterior goiter is laterovisceral.

The pathogenesis of posterior mediastinal goiter is related not only to its origin in the thyroid gland but also to other circumstances that differ from those presented by previous workers. Its symptoms are always milder than those of an anterior goiter, and they are pulmonary rather than mediastinal. The transpleural approach is the method of choice in removing a posterior goiter. In some cases it is possible and therefore useful to use the cervical approach, whereas in others it is necessary to use both approaches.

Professor Paolucci, a clinical surgeon from the University of Rome, congratulated Professor Oselladoro for his report and for the fact that he reported his personal experience. He said that he agrees with most of his ideas and then gave his report on retrosternal goiters. He operated on 25 patients with this type of goiter and had no mortality.

Center for the Study of Epilepsy.—A center for the study of epilepsy began to function in Bologna on May 1. It was established on the basis of agreements reached between the Cavina Neurosurgical Institute, the Ospedale Maggiore of the city, and the city council of Bologna. Professor Miletti, director of the Cavina Institute, explained the tasks of the center, which are to study epileptics that do not benefit from medical therapy and to ascertain whether better results may be obtained with surgical treatment.

Recent reports by the Cavina Institute have confirmed with statistical data that Jacksonian epilepsy occurring in an adult in good health is in most cases due to a cerebral tumor. To relieve the convulsions of these patients with palliative drugs is a grave mistake, since the diagnosis is delayed until other signs, such as a papilla due to stasis, pareses or paralyses and symptoms of intracranial hypertension, appear. These are all symptoms that jeopardize the results of a neurosurgical intervention.

Less often but not uncommonly generalized epilepsy is also a sign of a cerebral tumor, especially if it appears in young persons or in adults in good health. Moreover, some convulsions are caused by factors that can be removed surgically, i. e., meningocerebral scars due to trauma or to infantile encephalopathy, localized vascular lesions, such as aneurysms and angiomas, and diffuse vascular lesions, such as thrombosis and thromboangiitis obliterans (Buerger's disease). These are favorably influenced by a resection of the cervical sympathetic nerve and can be diagnosed easily by radiological means and arteriography.

Today the electroencephalogram is the most important investigative method for the study of epilepsy; it is possible with this technique to determine whether there is an epileptogenic focus. After this focus has been delimited by means of the electroencephalogram, at operation the focus is located by means of the electrocorticogram. With this technique the focus is clearly delimited and then removed surgically; the results of this treatment are satisfactory.

The epileptogenic foci are found more frequently in the temporal area; the clinical picture of these patients is characterized by psychomotor phenomena with periods of automatic or abnormal behavior. The center of Bologna has two laboratories of electroencephalography and laboratories for chemical-clinical analyses and radiological investigations.

The items in these letters are contributed by regular correspondents in the various foreign countries.

Some Statistical Data.—According to the recent publications of the National Institute of Statistics, stillborn infants in Italy numbered 26,948 in 1951 and 25,924 in 1952. From 1951 to 1952 the number of stillborn infants has increased slightly in seven Italian regions and 35 provinces, while it has decreased in the other 12 regions and 56 provinces.

Statistics about nervous and mental diseases indicate an increase, with more patients hospitalized in public institutions but with a lower fatality rate and a greater number of persons discharged from the institutions. This indicates the improvements that have been achieved in treatment of these diseases. It must be emphasized that in the years following World War II nervous and mental diseases assumed a prominent place in Italy; the greatest number of institutionalized patients was reached in 1950, with a total of 35,428. Statistics for accidents in industrial fields show significant improvement. During 1950 and 1951, 1,066,290 accidents occurred compared to 1,183,410 cases for 1941 and 1942.

LONDON

Postinoculation Poliomyelitis.—In 1950, Dr. Dennis Geffen (*M. Officer* **84**:29 [July 15] 1950) was one of the first to draw attention to the apparent association between inoculation with combined diphtheria-pertussis vaccine and poliomyelitis. He reported 30 cases in a London borough of poliomyelitis developing in children within a month of immunization, the site of paralysis being the site of injection. With his colleagues, he has now (*Lancet* **2**:1268 [June 27] 1953) recorded a follow-up on 29 of these children two years after the original illness. The remaining child could not be traced but "there is no reason to doubt that he is alive." As a control group 23 children of approximately the same age were selected who had poliomyelitis involving the arms at the same time but had not had recent injections.

The interval between the last injection and the onset of poliomyelitis ranged from 5 to 36 days, but doubt is expressed as to whether some of the longer intervals are accurate. In approximately 82% of cases it was from 5 to 16 days. The view is expressed that "taking into consideration the possibility that some mothers have not sought medical advice until such time as illness is acute or paralysis is present, it is probably fair to say that, if a child shows no sign of illness distinguishable by a medical practitioner within two or three weeks of injection, the period of risk has passed." At the time of the follow-up examination 46 (39.7%) of 116 limbs of the 29 inoculated children were involved, while in the control group 49 (53.3%) of 92 limbs were involved. This difference tends to confirm the authors' "clinical impression that the paralysis of post-inoculation poliomyelitis, though severe, was more limited in extent than in comparable uninoculated cases." The initial paralysis was severe or very severe in 39 limbs of the injected children, and in 27 cases (69.2%) remained so two years later; the comparable figure for the control group was 64%. "It therefore seems that the difference in recovery in limbs affected to a more or less equal extent in the inoculated and control group is not of significance."

The type of vaccine used in these children was combined diphtheria-pertussis prophylactic in 19, alum-precipitated toxoid in 8, and pertussis vaccine alone in 2. It is not known whether it was given subcutaneously or intramuscularly. Doubt is expressed as to whether immunization at an earlier age would prove effective in avoiding postinoculation poliomyelitis. Finally, the view is expressed that "it has not been proved that lay publicity on post-inoculation poliomyelitis is the reason for the recent reduction in the number of children immunised against diphtheria," and the authors "believe that the public is entitled to know the facts of the situation."

Fresh data on this subject are provided by J. Grant (*Brit. M. J.* **2**:66 [July 11] 1953), who records an epidemic of 112 cases of poliomyelitis in northeast England last year. Eight of the affected children had recently been inoculated. Details are also given of four similar cases in 1950 and one in 1948. Among all children from 6 months to 2 years old, there were 4 cases of poliomyelitis among those recently inoculated and 13 among those who had not been recently inoculated. This gave an attack rate of 1 in 112 for the inoculated children and 1 in 204 for the others. Dr. Grant comments, "In spite of the smallness of these numbers, I feel that they are reasonable in assessing the risk of a child developing poliomyelitis as being at least doubled as a result of intramuscular immunisation during an epidemic." In the recently inoculated patients, paralysis affected only the inoculated arm in three patients and the inoculated leg in one; it extended from the inoculated arm of a fifth patient to involve the opposite arm and leg. In two patients paralysis was localized to the ocular muscles and to the right leg respectively, although the injection had been given in the left arm. The eighth case was a nonparalytic one. Only 60 of the 130 patients not recently inoculated had paralysis and this much oftener involved the legs than the arms. In the five patients in whom the paralysis was definitely associated with the site of injection, the interval between the injection and the onset of symptoms was 15, 16, 16, 16, and 58 days respectively. In the other three cases in which there was not this association, the interval was 3, 5, and 46 days. In the 1948 and 1950 cases in which the sites of injection and of paralysis were associated, the interval was 10, 13, 13, and 18 days.

Attention is drawn to the fact that, considering all 13 cases of poliomyelitis following recent inoculation, the injection given intramuscularly in the arm on 10 occasions was followed by severe paralysis limited to the arm in five patients, and by extensive paralysis involving both arms in three; all these eight patients "have or are likely to have some degree of permanent disability." On the other hand, in three patients inoculated in the buttocks or thigh, only one had paralysis of the injected limb and it was transient. In view of these observations, and the increased tendency for involvement of the arm to be associated with respiratory paralysis as well as the greater handicap of a paralyzed arm than a paralyzed leg, it is suggested that the lower limb should always be used for intramuscular injections. The prophylactics used in these cases of postinoculation poliomyelitis were diphtheria alum-precipitated toxoid, pertussis alum-precipitated vaccine, and combined diphtheria toxoid and pertussis vaccine.

Attention is drawn to the fact that throughout the epidemic many injections of other substances were given intramuscularly. In only one case, however, was there a possible association with poliomyelitis, one in which injections of penicillin were given to a 6-month-old infant. An appeal is made to manufacturers to produce antigens that will be satisfactory for subcutaneous use.

National Health Service Anniversary.—On the occasion of the fifth anniversary of the National Health Service (the service was inaugurated on July 5, 1948) the Ministry of Health has issued some statistics covering these five years that, apart from their propaganda value, have a certain amount of general interest. They are shown in the following tabulation:

Hospital Service	
Staffed beds (in all hospitals)	470,000 (increase, 35,000)
Nursing and midwifery staff	Whole-time 142,000 (increase, 27,000) Part-time 27,000 (increase, 10,000)
Inpatients discharged	16,000,000
Attendances in outpatient departments	156,000,000
Patients supplied with hearing aids	305,000
Total donations of blood	3,000,000
General Medical Services	
Patients on physicians' lists	42,000,000
General Dental Services	
Courses of treatment provided	43,000,000
Dentures supplied	10,500,000
Ophthalmic Service	
Sight tests given	25,000,000
Pairs of glasses supplied	28,000,000
Pharmaceutical Service	
Prescriptions dispensed	1,002,000,000
Maternity and Child Welfare Clinics	
Attendances of mothers at ante- and postnatal clinics	8,500,000
Attendances of children at child welfare clinics	49,000,000
Domiciliary Midwifery Service	
Cases attended by midwives	1,000,000
Cases attended by maternity nurses	350,000

Fluoridation of Water.—The United Kingdom Mission, which visited the United States and Canada last year, has now published its report on "The Fluoridation of Domestic Water Supplies in North America as a Means of Controlling Dental Caries" (London, Her Majesty's Stationery Office, 1953).

In the opinion of the members of the mission, "Epidemiological studies in America have demonstrated beyond doubt that among children and adults who have been born and brought up in areas where the drinking water contains fluoride at a level of 1 p.p.m. or more, there is much less dental caries than in areas where the water is free from fluoride." Further, "The evidence is conclusive that among children in fluoridation areas there is a reduction in dental caries to a level comparable with that experienced where fluoride occurs naturally." In addition, they found "no scientific evidence that there is any danger to health from the continued consumption of water containing fluoride in low concentration."

They therefore recommend the adoption of fluoridation of water in England as "a useful means of reducing the incidence of dental caries" subject to certain preliminary steps being taken. One is to assess the required dose of fluoride to be added to water supplies in this country. One factor that will need to be taken into consideration here are the different food habits in our two countries. For instance, the amount of drinking water consumed in England may well be less than in the States. On the other hand, however, much more tea is consumed in England, and available evidence indicates that many teas are rich in fluoride and therefore a concentration of 1 ppm is not unusual in a cup of tea. These preliminary measures having been taken, the next proposed step is the addition of fluoride to the water supplies of some selected communities. A further cautious, but wise, note is struck in the statement that "in spite of the fact that the evidence of harmlessness is so strong as to be almost conclusive, research into the effects on health and disease of the continued use of water containing low levels of fluoride should be encouraged."

MEXICO

Seventeen Cases of Intestinal Atresia.—In 65,700 admissions to the Children's Hospital in Mexico City intestinal atresia was diagnosed in 17 cases. In five other cases with a clinical diagnosis of intestinal atresia the diagnosis could not be confirmed because the patients died and an autopsy was not performed.

In the *Boletin del Hospital Infantil* (**10**:28 [Feb.] 1953) Drs. Sariñana and Delgado reported a study of the first 17 cases, 12 in boys and 5 in girls. Six were born prematurely and 11 at full term. In two cases there was a past history of infectious hepatitis in the mother between the fifth and seventh month of pregnancy. In the others no history of virus infection during the pregnancy of the mother was found.

The time elapsed before admission to the hospital varied between 6 hours and 12 days, and the mortality was directly related to the lapse of time before treatment was started. The symptoms were those of intestinal occlusion and abdominal distention; the presence of peritoneal symptoms was related to the clinical stage in which the patient was seen.

The types and locations of atresia were as follows: in 1 case in the duodenum in the form of a diaphragm; in 3 cases in the jejunum with complete division of the intestine; in 10 cases in the ileum with 3 of these in the form of a diaphragm and 7 with complete separation of the lumen; in 2 cases in the ascending colon, with 1 membranous obstruction in 1 case and several such membranes in the other. Treatment in the cases with a membranous diaphragm consisted of rupture of the diaphragm through an incision in the bowel wall. In the cases with separation of the lumen, laterolateral enterostomy was performed, and gastroenterostomy in the case with duodenal atresia.

Thirteen of the 17 patients operated on died and 4 recovered, a mortality of 74.48%. The high mortality rate of the disease can be improved by early treatment; peritoneal and respiratory infections make the prognosis less favorable. Prematurity and the coexistence of other congenital anomalies, such as mongolism and circulatory defects, are also causes of the high mortality rate in these patients.

Eosinophilia in Infectious Hepatitis.—Viral hepatitis is a common disease in Mexico, and its incidence in this country seems to be increasing, as it is in other countries. At the Hospital de Enfermedades de la Nutrición, which is a rather small hospital, more than 200 cases have been studied in the last six years. One peculiarity of the disease that was sometimes observed was eosinophilia.

In order to determine the incidence of eosinophilia, as well as other leukocytic changes, the hematological data from 100 cases of viral hepatitis were analyzed by Drs. Báez-Villaseñor, Domínguez, Cárdenas, and Tech. Cuéllar. The clinical diagnosis was proved by the liver function tests in all of the cases; in addition, in 35 the diagnosis was confirmed by liver biopsy. Finally in three cases with a fatal result, postmortem studies were carried out.

The results of this investigation were published in the April-June issue of the *Revista de Investigación Clínica* (**5**:209, 1953). According to this report, a normal white blood cell count was found in 73% of the cases, leukopenia in 19%, and leukocytosis in only 8%. Absolute lymphocytosis was present in 40% and monocytosis, usually slight, in 13%. Eosinophilia occurred in 24% of the cases. The average percentage of eosinophils was 8.5%. It was, to a certain degree, parallel to the state and course of the liver function, and consequently it was suggested that it may have some value for determining the prognosis and clinical course of the disease.

SWEDEN

Treatment of Tuberculous Meningitis.—At a recent meeting of the pediatric and school hygiene section of the Swedish Medical Society, Dr. L. Silverstolpe reviewed the results of the treatment of 20 patients with tuberculous meningitis (16 men and 4 children between the ages of 3 and 11 years) at the Stockholm Fever Hospital during the period 1947-1952. None of the 20 had been vaccinated with BCG. The average observation period for the 11 who survived was over three years. Of nine patients given pure streptomycin in doses of 28 to 59 mg. per kilogram of body weight by intramuscular injection plus 50 to 100 mg. of the same drug by intralumbar injection, five survived. There were two deaths among the three patients given dihydrostreptomycin in doses of 35 to 60 mg. per kilogram of body weight by intramuscular injection plus pure streptomycin, 50 to 100 mg. by intralumbar injection. Combined treatment with *p*-aminosalicylic acid (PAS), 3 to 30 grains (0.2 to 2.0 gm.) daily by mouth, plus dihydrostreptomycin by intramuscular injection, and pure streptomycin by intralumbar injection was given to four patients, two of whom died. Among the three patients treated with isoniazid as well as the two forms of streptomycin, there were no fatalities, but two of the patients were still under treatment.

Reviewing the side-effects of streptomycin treatment among the 11 survivors, Dr. Silverstolpe pointed out that 8 of them showed loss of a caloric reaction. Among these eight were six adults with impaired equilibrium in the dark. Impairment of hearing was observed in five patients, one of whom was a child, while one adult was totally deaf. The side-effects of dihydrostreptomycin were so much more serious than those of pure streptomycin that the former should not be used in cases of tuberculous meningitis. Dr. Silverstolpe has come to the conclusion that an early diagnosis does much to improve the prognosis, since in the eight patients for whom complete recovery could be claimed treatment was begun within an average of eight days after the first manifestations of the disease. Much can be done to aid diagnosis by conducting an early search for acid-fast rods in direct preparations of suspect material. The most recent cases in this group received treatment with isoniazid, given by mouth in doses of 8 mg. per kilogram of body weight, combined with pure streptomycin, given by intramuscular injection in amounts of 50 mg. per kilogram of body weight, plus 100 mg. given by intralumbar injection when the concentration of streptomycin in the cerebrospinal fluid did not reach the desired therapeutic level with intramuscular injections alone.

THE LEISURE CORNER

THE "SUNDAY" PAINTER

Throughout the ages generations of physicians have been art-minded, finding considerable pleasure in attending art exhibitions, collecting paintings, and joining the ranks of amateur painters. The precise relationship between art and medicine has never been defined to the complete satisfaction of all participants in the two spheres of activity. Apparently something more than the mere quest for an outlet to expend excess energy, to escape from the monotony of medical routine, or to move away temporarily from the disconcerting problems associated with clinical practice is required to explain why so many members of the medical profession have for so long turned to the world of art as an avocation.

Some famous physicians of the past have actually put their artistic talents to practical use; for example, Richard Bright and Thomas Hodgkin, discoverers of diseases named after them, illustrated their own medical books and articles, while Joseph Lister, father of modern antiseptic surgery, made his own drawings to illustrate his surgical publications. Others, such as S. Weir Mitchell, the neurologist, and A. Graeme Mitchell, the pediatrician, exhibited talent as painters. Even the ancient Greek physicians were concerned with art. More than 2,300 years ago Hippocrates made a statement that can still serve as a motto for most art critics. Said he, "Life is short, art long . . . judgment difficult."

Perhaps among no other group of professional persons has the enthusiasm for painting been more highly developed or organized than among American physicians. Today thousands of physicians spend their spare time as "Sunday" painters splashing vivid colors on canvas or discovering the absorbing excitement connected with sculpturing, carving, whittling, and hammering out all sorts of art forms. Indeed, many of them belong to the American Physicians Art Association, an organization that holds an exhibition each year at the annual meeting of the American Medical Association.

Physicians have readily turned to art because, like artists everywhere, most of them have a quick eye, possess manual dexterity, and exhibit a keen and sympathetic interest in their environment and in human beings. Most of them, too, could be classified as academic artists, i. e., realists who paint along conventional lines. Now, however, great numbers of physicians will be found to paint in various styles and with various techniques. Some doctors, for instance, regard themselves as impressionists, others experiment with arbitrary postimpressionist arrangements of light and color, and still others follow the teachings of the abstractionist school. Yet it can be fairly stated that within the artistic soul of every amateur doctor-painter is an intense urge to raise or improve the standard of his work to the highest possible level. As in the case of most professional persons, physicians have a limited amount of time for relaxing with an avocation. The truth of the matter is that, unlike the professional painter, the "Sunday" painter need never apologize for his work, for the amateur can do no wrong!

It should be quickly realized that there is no such creature as a typical, standard-model "Sunday" painter; hence there can be no typical standardized approach to the teaching and guidance of amateur artists. To illustrate, the lot of the isolated amateur doctor-painter who resides in a small rural community can hardly be compared in terms of wealth of opportunity with that of his colleague in a metropolis like New York City. In this world center of art the amateur painter can easily attend important exhibitions and within a matter of days be able to compare his sense of critical values with those expressed by prominent art critics writing for the metropolitan press. Moreover, the amateur doctor-painter who lives in a big city is often able to attend art classes that have a substantial gamut of activity, ranging from the lone studio of a favored teacher to the hustle and bustle of a large art class.

Nonetheless, the dyed-in-the-wool "Sunday" painter actually requires neither studio nor absolute quiet or peace to pursue his hobby. He need not wait for "inspiration" or a "worthy" subject, for, as one French proverb has it, "Appetite comes with eating." Art can be found in the humblest pair of shoes, a chair, an apple, or an old vase full of flowers. Painting requires only enough initiative to start painting and enough humility to see beauty in the simplest blade of grass. Painting provides a form of meditation and, incidentally, great fun, since it satisfies the universal desire for self-expression. It would be a mistake to believe that all artists are born and not made. Many persons have secret yearnings for painting, and there is a vast amount of wasted talent in the world because so few persons have investigated the possibilities that can be found in the world of the "Sunday" painter.

In general, a basic problem confronting the doctor-painter is how to pick his way gingerly through a labyrinth of advice, art sources, arty discussions, and courses of instruction. The crucial problem, of course, is to avoid easy formulas for painting, facile tricks, clichés, and, for that matter, unswerving homage to some magnetic teacher's style of painting. The doctor-painter should learn his own capabilities, unhinge his mind from stereotyped thought, rediscover his own personality, and find a satisfactory way to think, feel, and express his own response to the world about him. Whether he realizes it or not, an amateur painter can always be relatively free from the restrictions imposed by academic influences and attitudes, and he can blaze new trails in the forest of experimentation. At all times, he might bear in mind the sagacious comment of André Gide, the eminent French writer and critic: "Be faithful to that which exists nowhere but in yourself—and thus make yourself indispensible."

Of course, the cultivation of a hobby and a new form of interest that will appeal to a physician cannot be improvised swiftly or undertaken in a single day. According to Winston Churchill who is probably the best-known amateur painter in the world (although President Dwight Eisenhower threatens him as a rival), everyone should have a hobby, and "to be really safe, one ought to have at least two or three." During World War I, at the age of 40, he discovered that painting was an inexpensive pastime that could not only completely absorb a person's mind without exhausting his body but also served as a companion with whom it was possible to walk a great part of life's journey. Painting, he found, provides new mental food and exercise, a heightened sense of observation, and a fresh appreciation of the paintings of the masters. As a spur to travel, he found that painting is unequalled. Every section of the country has a theme all its own, with individual lights, scenes, charm, and spirit. Even if the amateur painter cannot portray the world around him as he sees it, he is at least able to feel it, know it, and admire it forever.

"To have reached the age of forty," asserts Churchill, who has three paintings hanging in the Royal Academy, "without ever handling a brush or fiddling with a pencil, to have regarded with mature eye the painting of pictures of any kind as a mystery, to have stood agape before the chalk of the pavement artist, and then suddenly to find oneself plunged in the middle of a new and intense form of interest and action with paints and palettes and canvases, and not to be discouraged by results, is an astonishing and enriching experience."

The possession of paint and brushes is an enemy to boredom, even for those human beings whom Churchill broadly divides into three classes; namely, those who are worried to death, those who are toiled to death, and those who are bored to death. If anyone who reads these words doubts the pleasures and joys that come to the amateur painter and to the perpetual challenge of art, let him purchase a paint box and several brushes, a canvas and an easel, and have these objects at hand. Then: if within a short period of time his fingers do not itch to open the tubes of color, if he cannot make his own experiments and express himself in his own individual way, and if he cannot find endless and ecstatic enjoyment in the inexplicable mysteries of painting, it is reasonable to expect that he will not be suitably disposed to join the increasing ranks of "Sunday" painters.

CORRESPONDENCE

CARBON DIOXIDE INHALATION

To the Editor:—In addition to other aspects, Dr. Temple Fay discussed basic mechanisms of the therapeutic procedure described in his survey "Twenty Per Cent Carbon Dioxide Inhalation in Muscular Rigidity" (*J. A. M. A.* **152:**1623 [Aug. 22] 1953). While frankly conjectural as to precise details, he felt that "whatever effect it has must be secondary to some profound change in cellular function, caused either directly or indirectly by the gas itself."

Although various types of metabolic neurodynamic mechanisms are hypothesized, no mention is made of possible psychogenic factors that may explain the improvement "sustained . . . in certain types of disease for periods exceeding three years, when fortified by the appropriate physical therapeutic measures now available." It is pointed out that the therapeutic procedure is of little value in patients in whom relaxation while asleep does not reveal a decrease or disappearance of certain rigidities and tremors. This prerequisite for carbon dioxide therapy in itself suggests the psychic overlay present in some symptoms while the patient is awake.

There exists a considerable amount of literature concerning psychosomatic relations between qualitative or quantitative aspects of symptom manifestations in organic neurological disease, and psychical influence on these symptoms; for instance, H. Flanders Dunbar (Emotions and Bodily Changes, ed. 2, New York, Columbia University Press, 1938) in discussing such relationships, abstracts representative opinions including F. Mohr's, stating that according to the latter "psychophysical interaction can be seen very clearly in many organic diseases of the nervous system. How often, for example, a locomotor ataxia in tabes or multiple sclerosis is followed by a psychically conditioned anxiety which may come to overshadow the organic component . . . [as an example] it was possible, by explanation and reassurance, to restore the ability to walk to a degree sufficient for the patient's calling, whereas previous exercise therapy of long duration had been unsuccessful. It is evident that in this way the somatic disease process also is influenced favorably."

Dr. Dunbar quotes a passage from G. R. Heyer's discussion of hypnotherapy which further illustrates the point: "Thus the inner condition of the whole patient plays an important role for normal, pathological and therapeutic processes—which should be obvious. Attention must be paid to the elaboration of the disease—this is truest of all for organic nervous diseases. All these patients, be they tortured by pain or crippled in their motions, become gradually worn out, discouraged and desperate. Out of all proportion to the severity of their physical symptoms, these patients give up hope. The physician who is only a diagnostician stands ever ready to alleviate symptoms with drugs, even with morphine in increasing doses, whereas encouragement (not appeal to the 'will'), suggestion, and hypnosis occasionally accomplish apparently miraculous improvement, as, for example, in crises, lancinating pain, incontinence alvi et urinae, motor disturbances. In cases of multiple sclerosis, tabes, etc., one is reminded of the command 'take up your bed and walk' when one is able to make paralyzed patients get up from their 'mattress graves.' . . . a patient suffering from spastic spinal paralysis was unable to eat or to hold himself erect. After a few periods of superficial hypnosis—which had to be repeated from time to time—he was able to comb his hair, change his shirt, eat, write, etc. It is unnecessary to point out what relief even improvements of this sort may be to such patients. . . . postencephalitics belong perhaps among the more dreary pictures of nervous illness. Here suggestive-hypnotic treatment is always successful, so that it is difficult to understand why it is applied so rarely."

The basic value of inhalation therapy would lie in: "if the qualities of consciousness and activity could be retained and at the same time the relaxation present during sleep maintained, many benefits would be obtained through corrective therapy." It is more than likely that patients who are responsive to carbon dioxide would be responsive to systematic psychotherapy, as seems to hold true in instances in which the gas is used by some in the treatment of psychiatric patients. Furthermore, psychotherapy obviates the risk of exposing a patient to very real physical dangers described by Dr. Fay under the heading "Contraindications and Precautions Necessary."

HARRY C. LEAVITT, M.D.
University of Washington
School of Medicine, Seattle 1.

BERYLLIUM POISONING REGISTRY

To the Editor:—A man-made illness of considerable interest has been reported in the medical literature in this country since 1943 under various titles, in general referring to its association with exposure to certain beryllium compounds. As the years go by, more cases appear from a variety of industrial and research operations using beryllium compounds. With funds supplied by the Atomic Energy Commission, it is planned to develop a beryllium case registry at the Massachusetts General Hospital. The purpose of the registry is to facilitate a study of the epidemiology of this disease, an evaluation of the beryllium hazard of incriminated operations, and dissemination of knowledge of the clinical course of beryllium poisoning, especially in relationship to its medical management. The material collected is to be available for study, and from time to time data will be sent to participating physicians summarizing facts that have been established.

This description is being published in the hope that physicians, roentgenologists, and pathologists who have knowledge of cases of beryllium poisoning will participate in making this beryllium case registry complete. We have facilities and funds for prompt handling of any material, such as case records, roentgenograms, and tissue, that is submitted. It is planned to keep cases entered in the registry anonymous. We shall welcome any correspondence.

HARRIET L. HARDY, M.D.
Occupational Medical Clinic
Massachusetts General Hospital
Boston 14.

SHIPMENT OF PERIODICALS AND BOOKS FOR KOREA

To the Editor:—As a result of the recent appeal published in THE JOURNAL, May 30, 1953, page 476, the Alameda Medical Depot on August 1 had received 23 major shipments and numerous small shipments of medical books for trans-shipment to Korea and distribution to Korean medical schools. Services that have books, periodicals, equipment, and other items may ship them to the Commanding Officer, Alameda Medical Depot, Alameda, Calif., marked for KORMEDED, where the Department of the Army will assume responsibility for shipment of the material to Korea for distribution to the Korean medical schools in which they will be of greatest use. Donations of books and periodicals should be limited to those published after 1942. Shipments weighing over 100 lb. but less than a carload, should be shipped via freight (L. C. L. rate) collect. Shipments weighing less than 100 lb. may be shipped via railway express collect. To save expense to the donor, donations should be packed sufficiently to withstand shipment to Alameda only. The Alameda Medical Depot will repack all donations for export to insure safe arrival in Korea.

HOWARD A. RUSK, M.D.
477 First Ave., New York 16.

COUNCIL ON MEDICAL SERVICE

The Council on Medical Service has completed a study of the organization and operation of 198 county medical society grievance committees. The study is being published in booklet form and is available on request. The following paragraphs contain a brief summary of the data presented in the booklet.

COUNTY MEDICAL SOCIETY GRIEVANCE COMMITTEES

The establishment of improved mechanisms by constituent and component medical societies for adjudicating complaints against physicians is an official recommendation of the American Medical Association. In December, 1949, the House of Delegates adopted a resolution urging that all constituent medical associations establish grievance committees to hear complaints from the public. In 1952, the Council on Medical Service issued a report on grievance committees functioning on a state-wide basis. At that time 36 constituent associations had special committees to handle grievances and 4 states were considering the formation of such committees. By January, 1953, all of the 48 states, the District of Columbia, and Hawaii had formal provision for the hearing of complaints from the public. The 198 societies contributing to this study represent 41% of the 479 societies reporting the existence of some type of grievance committee.

Distribution of Grievance Committees

	Total Societies (Estimated)	Societies Reporting Grievance Committees	Societies Replying	% of Total Reporting
Group 1 (0-14 members).....	1,705*	57	15	26
Group 2 (15-19 members)....		163	60	37
Group 3 (50-99 members)....		91	38	42
Group 4 (100-199 members)..	114	74	36	49
Group 5 (200-299 members)..	42	37	14	38
Group 6 (over 300 members)	71	57	35	61
	1,932	479	198	

* Since the exact number of county societies in each size group is not yet available for 1953, estimated figures are used to show the approximate distribution of the various size societies.

Although previous Council reports have been devoted primarily to state-wide committees, they have also pointed out that "progress made toward attaining a nationwide network of state programs to hear public complaints in no way lessens the importance of similar programs by the local medical societies. . . . Since membership in organized medicine originates in the county medical society, disciplinary action must either originate or end there."

Many complaints are settled more quickly and effectively locally, since a county society committee is usually acquainted with the situation and with the parties involved. A local committee lessens the burden of the state committee and possibly of the complainant and the physician, as well. A local committee may also be effective from a public relations standpoint. The public is more likely to see the service in its true perspective as a self-disciplinary measure by the members of the local medical society. They sometimes object when an outside group is required to police the local society.

A grievance committee as considered here refers to any committee, whatever its title, that receives, and assists in the adjustment of, complaints from the public against individual physicians or the medical profession generally.

Most of the local committees prefer the title "Grievance Committee," although some 50 different titles are now being used. Recently there has been much discussion on the possibility of a more appropriate title than "Grievance Committee." After studying this, however, the Council on Medical Service reported the advisability of continuing the use of this title.

The average local grievance committee began operation in 1949 or after. This action on the part of so many was, no doubt, prompted by the resolution of the House of Delegates, urging the formation of such committees. It should be mentioned that the larger societies are more likely to have a long-standing committee of this type, while the smaller society is likely to have begun its committee within the last five years.

MEMBERSHIP

Local grievance committees do not normally have lay membership. The few reporting such membership usually have two lay members, either elected by the society or appointed by the president of the society. Inclusion of laymen in grievance committees is still in the experimental stage but may serve to strengthen community trust in the impartial attitude of the committee by assuring the representation of the patient's viewpoint. Physician membership ranges from 1 to 90 members; however, the average committee in this study has three physicians, usually appointed by the president of the society. The committee chairman is appointed by the president of the society in most cases.

MEETINGS AND JURISDICTION

Grievance committees generally meet on call, whenever the need arises. Some committees have never met, since they have received no complaints. Because of this arrangement, some societies have questioned the worth of maintaining the committee in formal existence. However, the existence of such a committee is an earnest effort on the part of the society to hear any grievances against society members.

The typical grievance committee handles complaints concerning individual society members, any physician in the county, and the society as a whole. The society has no authority over physicians who are not members, but, as the representative of the medical profession, it finds that interest in resolving disputes between patients and these nonmember physicians is worth while. Complaints from any source, on all phases of medical care, are heard by the committee. In answer to the question about committee authority, arbitration or referral of the complaint to the society's disciplinary body are the extent of the average committee's jurisdiction.

Although some societies argue that the existence of a grievance committee invites trouble from "cranks" and psychopaths, the average grievance committee of the smaller societies receives only one complaint, if any, during the year. Obviously, the larger societies have more complaints because they have more physician members and more patients are served. Fees, inadequate service, and general misunderstandings are the commonest sources of complaint. The committee strives to arrive at a decision satisfactory to both patient and physician.

METHODS OF OPERATION

Various methods of receiving complaints are in operation among the various counties responding, but complaints are usually received in written form only. Unless a direct complaint has been received, the typical committee cannot initiate investigations on its own authority. In most cases society members are requested to answer complaints in writing. Most of the committees prefer to avoid formal arbitration and make every attempt to settle the complaint "out of court." The patient is asked to discuss his grievance with his physician before the committee will consider the case. If the complaint does come before the committee, the parties involved are usually questioned separately. The average society has arrangements whereby committee decisions can be appealed by either the physician or the patient. The most popular board of appeal is the state grievance committee.

Committees usually report on cases at the regular society meetings. Although this is considered the average situation, a number of counties do not report on cases handled. Names of physicians involved in cases are usually omitted in reports to the society as a whole. One committee that reported the names in the society bulletin was instructed by the society to keep this information confidential in the future.

Approximately 61% of the committees have no formal liaison with state grievance committees, and 87% make no reports to state committees. More than 50% of the 175 committees reporting in this category do not routinely refer difficult cases to the state committee for settlement.

PUBLIC RELATIONS

"It pays to advertise," and a "well-informed public" are oft-repeated phrases. In the case of grievance committees,

however, most of the societies have confined their publicity to an announcement of the committee's formation. In the great majority of the societies, the names of the members of the committee are not announced to the public. Comparatively few societies report that the public was given complete information on how to use the committee. If the grievance committee were to continue publicity, replies indicate that it would choose the newspapers and the radio as the most effective channels. Despite the fact that one society reports that it receives no cooperation from the local newspapers, the typical committee generally does not receive adverse publicity. Failure to publicize the committee is generally the result of an effort to discourage ill-founded and nuisance complaints.

COMMENT

The information presented in this summary has been condensed from a more detailed Council report in order to present a picture of the average local grievance committee, its organization and operation. Local mechanisms are most important in the larger urban and metropolitan areas, since state committees may well serve to cover effectively the small urban and rural areas. It is most important that the committee functions and procedures be clearly defined for satisfactory operation of the program.

Lack of understanding accounts for many of the complaints received. Physicians do not take time to discuss either the services or the charges. Frequently complaints result from the lack of knowledge that medical care includes other costs, as well as the physician's fee. Today, a doctor's every action reflects not upon himself alone but on the entire medical profession. A certain minimum of police work is necessary to protect the profession's good name. The grievance committee is a protective mechanism for both the public and the medical profession and should be regarded as such. Even when few complaints are received, the committee's existence is valuable in demonstrating the medical profession's willingness to discuss problems of medical care with the public. It is one means of explaining the problems that the public does not understand about the practice of medicine, and it also gives the doctor insight into problems of his patients, about which he may have been unaware. The existence of a grievance committee, empowered to investigate the complaint of a dissatisfied patient, serves to improve professional conduct. Furthermore, public confidence in the profession is strengthened.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Taxes: Deductibility of Expenses of Postgraduate Study.—The petitioner claimed a certain expense to be an allowable deduction from his income tax. The Commissioner of Internal Revenue disallowed the deduction, and the tax court upheld the disallowance on the ground that the expenses were nonbusiness ones "because of the educational and personal nature of the object pursued by the petitioner." The petitioner, therefore, appealed to the United States Court of Appeals, Second Circuit. He had been a member of the bar for many years and in 1944 was admitted to practice before the Treasury Department. In 1946 he was in active practice in Binghamton, N. Y., as a member of a firm of lawyers there. The firm engaged in general practice but did considerable work that required at least one member to be skilled in matters pertaining to federal taxation and to maintain such skill by keeping informed as to changes in the tax laws and the significance of pertinent court decisions when made. His partners relied on the petitioner to keep advised on that subject, and he accepted that responsibility. One of the various ways in which he discharged it was by attending, in the above-mentioned year, the Fifth Annual Institute on Federal Taxation, which was conducted in New York City under the sponsorship of the Division of General Education of New York University. In so doing he incurred expenses for tuition, travel, board, and lodging of $305, which he claimed as an allowable deduction under section 23 (a) (1) (A) I.R.C., as ordinary and necessary expenses incurred in carrying on a trade or business. The Institute on Federal Taxation was not conducted for the benefit of those unversed in the subject of federal taxation, and students were warned away. In 1946, it was attended by 408 attorneys, accountants, trust officers, executives of corporations and the like. In 1947, over 1,500 of such persons from many states were in attendance. The course was "designed by its sponsors to provide a place and atmosphere where practitioners could gather trends, thinking and developments in the field of Federal taxation from experts accomplished in that field."

We may start, said the court, by noticing that the petitioner does not rely on the section of the Internal Revenue Code that permits the deduction of certain nontrade or nonbusiness expenses, but rests entirely on his contention that the deduction he took was allowable as an ordinary and necessary expense incurred in the practice of his profession. The expenses were deductible if they were "directly connected with" or "proximately resulted from" the practice of his profession. And if it were usual for lawyers in practice similar to his to incur such expenses they were "ordinary." They were also "necessary" if appropriate and helpful. But this, the court continued, is an instance emphasizing how dim a line is drawn between expenses that are deductible because incurred in trade or business, i. e., because professional, and those that are nondeductible because personal.

In a prior United States Supreme Court case there is a dictum that the cost of acquiring learning is a personal expense. The issue decided in that case, however, said the court, is far removed from the one involved here. There the taxpayer paid debts for which he was not legally liable whose payment enhanced his reputation for personal integrity and consequently the value of the good will of his business, and it was held that these payments were personal expenses. The general reference to the cost of education as a personal expense was made by way of illustrating the point then under decision, and it related to that knowledge obtained for its own sake as an addition to one's cultural background or for possible use in some work that might be started in the future. There was no indication that an exception is not to be made where the information acquired was needed for use in a lawyer's established practice. This situation, the court continued, is closely akin to a decision of the Court of Appeals where the expenses incurred by a teacher in attending a summer school were held deductible. The only difference is in the degree of necessity that prompted the incurrence of the expenses. The teacher could not retain her position unless she complied with the requirements for the renewal of her teaching certificate; and an optional way to do that, and the one she chose, was to take courses in education at a recognized institute of learning. Here the petitioner did not need a renewal of his license to practice, and it may be assumed that he could have continued as a member of his firm whether or not he kept currently informed as to the law of federal taxation. But he was morally bound to keep so informed and did so, in part, by means of his attendance at this session of the institute. It was a way well adapted to fulfill his professional duty to keep sharp the tools he actually used in his going trade or business. It may be that the knowledge he thus gained incidentally increased his fund of learning in general, and, in that sense, the cost of acquiring it may have been a personal expense, but we think that the immediate, over-all professional need to incur the expenses in order to perform his work with due regard to the current status of the law so overshadows the personal aspect that it is the decisive factor. Even if in its cultural aspect knowledge should for tax purposes be considered in the nature of a capital asset, as was suggested, the rather evanescent character of that for which the petitioner spent his money deprives it of the sort of permanency such a concept embraces.

Accordingly the decision of the Commissioner and the tax court was reversed, and the cause was remanded for the allowance of the claimed deduction. *Coughlin v. Commissioner of Internal Revenue, 203 F. (2d) 307.*

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Dermat. and Syphilol., Chicago

67:541-644 (June) 1953

*Bacillus Anthracis: Observations on In Vitro Sensitivity to Seven Antibiotics with Comment on Therapeutic Implications. W. P. Boger. —p. 541.
Malocclusion and Its Effect Upon Oral Membranes. M. T. Van Studdiford.—p. 546.
Ochronosis. C. W. Laymon.—p. 553.
Dermatological Manifestations of Familial Autonomic Dysfunction (Riley-Day Syndrome). I. J. Mintzer and Z. Rubin.—p. 561.
Stress Dermatoses: Suggested Integration of Allergic-Psychogenic Dermatoses. H. L. Arnold Jr.—p. 566.
*Physiologic Studies in Atopic Dermatitis (Disseminated Neurodermatitis): I. Local Cutaneous Response to Intradermally Injected Acetylcholine and Epinephrine. W. C. Lobitz Jr. and C. J. Campbell.—p. 575.
Erythema Annulare Centrifugum: Its Relation to Internal Disease. A. Stillians.—p. 590.
Cutaneous Papillomatosis: Confluent and Reticulated Variety. A. W. Young Jr —p. 594.
Premalignant Fibroepithelial Tumors of Skin. H. Pinkus.—p. 598.
Occupational Melanosis. A. J. Reiches.—p. 616.
Paradoxical Effect of Penicillin: Epithelioma in Situ Associated with Syphilitic Granuloma. I. N. Holtzman.—p. 622.

Bacillus Anthracis: Sensitivity to Antibiotics.—Special circumstances made available to Roger 29 strains of Bacillus anthracis. Fifteen of the strains had been preserved at 20 C for from 10 to 13 years after their isolation from human infections. The virulence of these strains was established by guinea pig tests. The remaining 14 strains were freshly isolated from human cases of the disease. All of the 29 strains were tested in vitro for susceptibility to seven antibiotics: chlortetracycline (Aureomycin), chloramphenicol, neomycin, penicillin, polymyxin, streptomycin, and oxytetracycline (Terramycin). Uniform sensitivity of all strains to chlortetracycline and oxytetracycline was observed; on the other hand, all were resistant to polymyxin. The greatest variation in sensitivity within these strains was observed with reference to penicillin. The degree of sensitivity of these strains to streptomycin and neomycin was similar, and they may be regarded as moderately sensitive to these two agents. Clinical experience demonstrated that chlortetracycline, chloramphenicol, penicillin, and oxytetracycline are of value in the treatment of cutaneous anthrax, and the laboratory observations of in vitro susceptibility to these antibiotics correlate well with the therapeutic results. It might therefore be predicted on the basis of these laboratory tests that streptomycin and neomycin would prove of value in the treatment of cutaneous anthrax.

Cutaneous Response to Injection of Acetylcholine and Epinephrine in Atopic Dermatitis.—Etiological concepts of atopic dermatitis range from the pure "allergic" to the pure "psychosomatic." A series of physiological studies is being undertaken of the etiological mechanisms involved in the production of this syndrome. When the skin of the normal person is firmly stroked with a pointed (blunt) instrument, there takes place the triple response of Lewis and Grant: (1) red line, (2) flare, and (3) wheal. The "red line" develops in 3 to 15 seconds and is due to dilatation of the capillaries, and is not dependent upon nervous mechanisms. The "flare" (or spreading flush) develops a few seconds after the red line, and is due to an axon-reflex dilatation of the arterioles, and is dependent upon local nervous mechanisms (axon reflex). The "wheal" (or local edema) completely replaces the red line (red reaction), and develops in one to three minutes after injury, is surrounded by the flare, and is due to transudation of fluid from the minute vessels (capillaries) involved previously in the production of the red line (red reaction). Evidence has been presented that a diffusible H substance (or histamine) is responsible for the three reactions. When the skin of the patient with atopic dermatitis is stroked with a pointed instrument, the red line appears in 15 seconds; 5 to 15 seconds later vasoconstriction occurs, producing a blanch that replaces the red line, the well-known white line or "white dermographism." This blanching does not have any whealing component. In studying cutaneous vascular physiology it is important to know what will be the vascular response to adrenergic stimuli (epinephrine) and to cholinergic stimuli (acetylcholine). Observations on 10 patients with atopic dermatitis who received intradermal injection of acetylcholine and epinephrine revealed that the response to epinephrine is the same as that in normal persons, including the production of moderate sweating in the vasoconstrictor zone. The sweat response and axon-reflex response to acetylcholine are normal. However, a marked deviation from normal is evidenced by the "delayed blanch" (vasoconstriction) beyond the injection wheal that occurs between three and five minutes after the intradermal injection. The slowness of onset of the "delayed blanch" and of its spread peripherally, and the lymphatic-like type of spread making pseudopods of vasoconstriction not associated with whealing also suggest that the phenomenon was the result of the direct action of the vasoconstrictor substance on the blood vessels of the skin. Such a vasoconstrictor substance is either (1) acetylcholine itself acting to give a motor response (constrictor) rather than the usual inhibitor response (dilator), or (2) some other vasoconstricting substance which is being released after acetylcholine has been injected. There is no precedent in the literature for the latter supposition, but there is for the former, i. e., acetylcholine can produce a motor (constrictor) response.

A.M.A. Arch. Neurology and Psychiatry, Chicago

69:669-790 (June) 1953

Roentgenological Findings in Tuberous Sclerosis: Bone Manifestations. H. I. Berland.—p. 669.
Language Behavior in Psychoneurotic Patients. M. Lorenz and S. Cobb. —p. 684.
*Prognosis of Neurologic Illness Following Vaccination Against Smallpox. H. G. Miller.—p. 695.
Electroencephalograms of Nonepileptic Psychotic Patients Awake and Asleep. G. Lyketsos, L. Belinson and F. A. Gibbs.—p. 707.
Psychodynamics in Excessive Drinking of Alcohol. J. W. Higgins. —p. 713.
Effect of Mephenesin Upon Anxiety. S. L. Block.—p. 727.
Xanthochromia of Cerebrospinal Fluid. II. Preliminary Description of Several New Colored Substances. R. M. N. Crosby and G. L. Weiland. —p. 732.
Thiamylal in Electroconvulsive Therapy and Significance in Analysis of Seizure Mechanisms. R. S. Green and R. Leiser.—p. 737.
Electroencephalographic Findings Associated with Subdural Hematoma: Review of 45 Cases. E. A. Rodin, R. G. Bickford and H. J. Svien. —p. 743.
*Wilson's Disease (Hepatolenticular Disease): Family Study. F. L. Sullivan, H. L. Martin and F. McDowell.—p. 756.

Neurological Illness After Smallpox Vaccination.—Miller reports on 27 cases of neurological illness following smallpox vaccination. In 16 of these the disease was purely encephalitic; 5 were cases of encephalitis with associated signs of involvement of the spinal cord or nerve roots, 3 of transverse myelitis, and 3 of focal cerebral lesions without unequivocal evidence of encephalitis. Death occurred in eight cases within hours or days of the onset of the illness; all these cases were from the encephalitic group. Although residual organic signs of the illness were frequent and included paraplegic, hemiplegic, and

Periodicals on file in the Library of the American Medical Association may be borrowed by members of the Association or its student organization and by individual subscribers, provided they reside in continental United States or Canada. Requests for periodicals should be addressed "Library, American Medical Association." Periodical files cover only the last 11 years, and no photoduplication services are available. No charge is made to members, but the fee for other borrowers is 15 cents in stamps for each item. Only three periodicals may be borrowed at one time, and they must not be kept longer than five days. Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

radicular syndromes, dysarthria, epilepsy, and involuntary movements, in few cases was any serious physical disability found on reexamination after several years, and there were no instances of progressive nervous illness, except one of coincidental postencephalitic Parkinsonism. Psychiatric sequelae were common and oftener disabling. The focal cerebral illness may arise from thrombosis in arteries or veins which are the seat of inflammatory change. As regards the prognostic evaluation of these cases, the author says that they are "selected" to the extent that every surviving patient at some stage received a pension for disability resulting from neurological illness following vaccination. It is possible that cases of similar illness in which recovery occurred without sequelae have been omitted. That the present series may be more representative than this qualification would imply is suggested by figures provided by one of the fighting services at risk during this period. Among 1,750,000 persons vaccinated between 1941 and 1950, 10 had postvaccinal encephalomyelitis (an incidence of 1 in 175,000 vaccinations), with 3 deaths. The mortality is identical with that reported in the present series. If one bears in mind the possible omission of milder cases, the mortality rate in the present series is in keeping with that previously reported. Death occurred in 8 of 27 cases.

Wilson's (Hepatolenticular) Disease.—Two siblings of a family in which five of six siblings in 1931 had been discovered by Curran to have Strümpell-Westphal pseudosclerosis, or progressive hepatolenticular degeneration, were again hospitalized in 1952, and presented Sullivan and associates with the opportunity to study again and to review an unusually large family group with this disorder and to observe the natural history of the disease during a 21-year period. Wilson, in his discussion of hepatolenticular degeneration, noted only one family with more members afflicted, a family of 14 in which 6 members had the disease. He reported only two patients who lived more than 20 years after the onset of symptoms. Recent studies have indicated that even the members of the family with no clinical evidence of hepatolenticular degeneration may show some characteristic biochemical dysfunction, notably a nonspecific aminoaciduria. This paper extends the histories first presented by Curran and describes recent studies of the four remaining members of the family. Five of seven children of this family, including a pair of twins, have had progressive hepatolenticular degeneration. The twins exhibit characteristic low serum copper concentration and ceruloplasmin content, but no such abnormality can be demonstrated in the unaffected members of the family.

American Heart Journal, St. Louis

46:1-160 (July) 1953

Further Studies of Relationship Between Pulmonary Arteriolar Resistance and Pulmonary Artery Pressures. N. O. Fowler Jr.—p. 1.

Duration of Q-U Interval and Its Components in Electrocardiograms of Normal Persons. E. Lepeschkin and B. Surawicz.—p. 9.

Diagnosis of Posterior Myocardial Infarction. L. Wolff, K. S. Mathur and J. L. Richman.—p. 21.

Ventricular Esophageal Electrocardiogram in Diagnosis of Myocardial Infarction. I. L. Rubin, M. P. Margolies, A. Smelin and O. A. Rose.—p. 38.

Latent Wolff-Parkinson-White Syndrome. A. M. Lyle.—p. 49.

Physical Basis of Low-Frequency Ballistocardiograph. H. C. Burger, A. Noordergraaf and A. M. W. Verhagen.—p. 71.

Esophageal Pressure Pulse Patterns (Esophageal Piezocardiogram): III. Mitral Insufficiency. R. P. Lasser, B. S. Epstein and L. Loewe.—p. 84.

*Genetic Studies on Hypercholesteremia: Frequency in Hospital Population and in Families of Hypercholesteremic Index Patients. L. E. Schaefer, S. R. Drachman, A. G. Steinberg and D. Adlersberg.—p. 99.

*Studies in Cardiovascular Syphilis: III. Natural History of Syphilitic Aortic Insufficiency. B. Webster, C. Rich Jr., P. M. Densen and others.—p. 117.

Hypercholesteremia in Hospital Population.—The serum cholesterol level was studied in 250 men and 250 women (consecutive admissions) at the Mount Sinai Hospital in New York. A specimen of venous blood was withdrawn the morning following admission after the patient had fasted for 12 hours. The Schoenheimer and Sperry method was used. Hypercholesteremia was considered to be present when the cholesterol level exceeded 279 mg. per 100 ml. of serum. On this basis 97 patients (41 men and 56 women) were hypercholesteremic, their average age being 52.8 years and the average cholesterol level 348 mg. per 100 ml. of serum. Diseases which are generally associated with hypercholesteremia were found in 22 of these hypercholesteremic patients and they were therefore excluded from further consideration. Thus 75 patients (32 men and 43 women) had idiopathic hypercholesteremia. An analysis was possible of the families of only 59 of these patients. The study included 97 siblings and 110 children who were essentially healthy persons. Hypercholesteremia was found in 51.5% of the siblings and 29.4% of the children. The study was repeated taking into consideration the persons' age, since other authors have found that serum cholesterol levels vary with age. On this basis hypercholesteremia was found in 12% of the 478 patients, 36.2% of the siblings of the 59 hypercholesteremic patients whose families were studied, and 34% of their children. Of the 478 patients 266 were Jewish. Hypercholesteremia was found more frequently among them than among the non-Jewish patients (21% as against 9%). However, hypercholesteremia was as frequent among the siblings and the children of the Jewish patients as among those of the non-Jewish patients. This seems to indicate that environmental factors (different occupations, housing, diet) are not of decisive importance in determining the presence or absence of hypercholesteremia. It seems to suggest that the disease is primarily genetically determined and that the gene leading to a disturbance of the lipid metabolism that manifest itself as hypercholesteremia occurs more frequently among Jewish than non-Jewish persons.

Natural Course of Syphilitic Aortic Insufficiency.—The course of syphilitic aortic insufficiency was investigated for 20 years in 309 patients from the New York Hospital and 711 from the Johns Hopkins Hospital. A diagnosis of aortic insufficiency thought to be due to syphilis had been made in all of these patients. About 70% of those from the first institution and 85% of those from the second were followed throughout the study period or to the time of their death. The long-term prognosis was good; 43% and 33% of the patients survived 10 years and 30% and 20% survived 15 years at the New York and Johns Hopkins hospitals, respectively. The patients who were free of symptoms at the time of diagnosis had a greater survival than those who already had symptoms; 51% of the first group survived 10 years as against 29% of the second group; 58% of patients who never had symptoms survived 10 years, whereas only 25% of the patients who developed them after the diagnosis survived the same period of time from the day of onset. The patient's age at the time of diagnosis had some effect on the survival period but it was never so pronounced as is often thought. The death rate was slightly increased during the first five years of the disease in patients who were under 40 years of age at the time of diagnosis, but thereafter the prognosis was better in these patients than in those who were older when first seen. About 54% of the patients in this age group survived 5 years, 35% 10 years, and 30% 15 years. On the other hand, 42% of patients who were 60 years of age when first seen survived 5 years, 21% 10 years, and 12% 15 years. The effect of race and sex on the prognosis was hard to evaluate; Negro men, however, had a poorer prognosis than Negro women or whites of both sexes. The effect of the patient's type of work could not be investigated thoroughly, but most of the patients had been compelled to heavy physical exertion because of their economic condition. Congestive heart failure and angina were the complications which were found to be significant in this study. Less than 20% of the patients with failure at the time of diagnosis survived 5 years and less than 6% survived 10 years. Those who remained free of failure showed a very low mortality, 56% surviving 15 years. Of those who remained free of angina 29% survived 10 years as against 17% of those who had this symptom. It was not possible to evaluate the effect of treatment prior to or after the time of diagnosis. A total of 632 patients died, 439 among those seen at the Johns Hopkins Hospital and 139 among those seen at the New York Hospital. About 75% of patients in each group died with symptoms of cardiovascular disease. Autopsy was performed in 219 patients and it proved

the presence of syphilitic aortic insufficiency in 84.6% and 81.9% of the Johns Hopkins and the New York hospitals patients, respectively. An additional 11.4% had aortitis without demonstrable insufficiency among the New York Hospital group.

American Journal of Medical Sciences, Philadelphia

225:589-712 (June) 1953

Therapeutic Considerations and Controversial Issues in Modern Management of Acute Myocardial Infarction. H. I. Russek.—p. 589.

Observations on Erythrocyte Sedimentation Rate in Congestive Heart Failure. A. E. McGinnis, W. E. Lansche and R. J. Glaser.—p. 599.

Circulatory and Ventilatory Changes in Chronic Rheumatic Heart Disease with Mitral Stenosis. F. D. Gray Jr. and F. G. Gray.—p. 605.

*Use of Quinidine in Chronic Auricular Fibrillation. C. A. Fleischmann. —p. 617.

Weight Reduction: Study of Group Method: Preliminary Report. H. I. Harvey and W. D. Simmons.—p. 623.

Pyrogen-Like Complication of Cardiac Catheterization: Its Pathogenesis. F. A. Hernandez and M. S. Saslaw.—p. 626.

Hemolytic Transfusion Reaction Caused by Anti-c Antibody (With Note on Application of Coombs Test to Crossmatching Procedures). P. G. Frick.—p. 630.

Value of Oral Terramycin in Pre-Operative Preparation of Gut. H. S. Morton, M. I. Riddell and E. G. D. Murray.—p. 636.

Comparison of Results of Treatment of Pneumococcic Infections in Mice with Multiple Doses of Aureomycin and Penicillin Combined Compared with Each Drug Alone. M. H. Lepper, G. G. Jackson, H. F. Dowling and J. Seto.—p. 648.

*Five-Year Follow-Up of 100 Cases of Miliary and Meningeal Tuberculosis Treated with Streptomycin. K. M. Smith.—p. 657.

Epidemic Hemorrhagic Fever. F. W. Pruitt and E. A. Cleve.—p. 660.

Renal Calculi and Uremia as Complications of Lymphoma. A. S. Weisberger and L. Persky.—p. 669.

Possible Relationship of Folic Acid to Uric Acid Metabolism as Exemplified by Case of Non-Tropical Sprue. B. Zumoff.—p. 674.

Aminoaciduria in Childhood: Cystinuria and Cystinosis. W. R. Eberlein. —p. 677.

Heart in Pregnancy: Review of Recent Studies of Cardiovascular Physiology and Heart Disease. A. Rubin.—p. 687.

Use of Quinidine in Chronic Auricular Fibrillation.—Regular sinus rhythm can be reestablished and maintained in many patients with chronic auricular fibrillation by the judicious use of quinidine. The degree of success attained depends to a large extent on the cause of the fibrillation. In a group of 34 patients treated by the authors those with arteriosclerotic heart disease and thyroid heart disease showed the best results. Patients were started on 0.2 gm. of quinidine every two hours for six doses; if sinus rhythm was not restored on this dosage, no further quinidine was given until the following day. Each individual dose was then increased by 0.2 gm. daily until conversion occurred or the dose amounted to 0.8 gm. every two hours. No further attempt was made to reestablish sinus rhythm when fibrillation continued after the maximum dosage was reached. The greatest number of conversions were secured with a dosage of 0.4 gm. every two hours. Reactions severe enough to require discontinuance of the drug were observed in six cases. One patient with mitral stenosis of rheumatic origin and recent hemiplegia from embolization died in her sleep the day after conversion had apparently been secured. The risk of embolization or sudden death is not appreciably increased during quinidine therapy, and any risk involved can be lessened by careful observance of the contraindications to the treatment. Preliminary digitalization, if it can be carried out, will afford protection against a very rapid ventricular rate. Conversion was secured in 24 of the 34 patients; follow-up of 22 of these showed 19 living and 3 dead, two from congestive failure and one from an unknown cause. Sixteen of the 19 survivors had maintained sinus rhythm for periods ranging from 18 months to a few weeks in the case of those treated most recently. Auricular fibrillation in itself produces cardiac dilatation and progressive heart failure in patients with otherwise normal hearts; conversion, which carries little risk and is followed by great improvement in the patient's well-being, should therefore be attempted whenever possible.

Five-Year Follow-Up in Miliary and Meningeal Tuberculosis.—Final survival figures for 100 patients with acute disseminated miliary tuberculosis or tuberculous meningitis or both treated with streptomycin in Veterans Administration hospitals during the year beginning in April, 1946, have now been compiled. Follow-up at the end of two years showed 21 survivors; of these, six have since died, leaving 15 survivors in all at the end of five years. Miliary tuberculosis was followed by meningitis in 13 patients, none of whom was alive at the time of the two-year follow-up. All deaths due to the original miliary or meningeal tuberculosis occurred in the first two and one-half years. Classification of the patients alive and well five years after the completion of treatment showed the following percentages according to the type of disease originally present: (1) miliary tuberculosis: alive, 47%, and well, 37%; (2) miliary tuberculosis and tuberculous meningitis combined: alive and well, 4%; and (3) tuberculous meningitis: alive 12%, and well, 7%.

American Journal of Obstetrics & Gynecology, St. Louis

65:1167-1396 (June) 1953. Partial Index

*X-Ray Diagnosis of Uterine Pathology. A. M. Davids.—p. 1167.

Clinical Study of Premenstrual Tension. J. H. Morton, H. Additon, R. G. Addison and others.—p. 1182.

*Syndrome of Testicular Feminization in Male Pseudohermaphrodites. J. McL. Morris.—p. 1192.

Carcinosarcoma of Endometrium. J. Klein.—p. 1212.

An Evaluation of Differential Staining Techniques in Cancer Cytology. B. C. Hopman.—p. 1228.

Squamous-Cell Carcinoma Arising in Benign Cystic Teratoma of Ovary: Report of Three Additional Cases and Review of Literature. R. L. Alznauer.—p. 1238.

Hyperestrinism in Old Women: Report of Case with Cortical and Medullary Hyperplasia of Ovaries and Possible Adrenal Hyperactivity. R. E. Scully.—p. 1248.

Hypopotassemia, as Encountered on Gynecology Service. Gail Gar Lyai Li.—p. 1257.

Dysontogenetic Tumors of Female Lower Genital Tract. R. M. Ruch. —p. 1263.

N-Allylnormorphine: An Antagonist to Neonatal Narcosis Produced by Sedation of Parturient. J. E. Eckenhoff, G. L. Hoffman Jr., and L. W. Funderburg.—p. 1269.

Intrinsic Fetal Mortality of Cesarean Section. H. W. Taylor and E. J. Ward.—p. 1276.

Can We Correctly Assess Cephalopelvic Disproportion? G. F. Gibberd. —p. 1284.

Induction of Labor in Eclampsia. D. D. Friedman.—p. 1293.

Postnatal Growth and Development of Infants Born After Diethylstilbestrol Administration During Pregnancy. E. M. Canario, G. Houston and C. A. Smith.—p. 1298.

Marginal Insertion of Cord and Premature Labor. S. Brody and D. A. Frenkel.—p. 1305.

Thirty-Seven-Year Survey of Ectopic Pregnancy: 266 Consecutive Cases Without Mortality. B. Leff.—p. 1313.

Pregnancy Following Major Thoracic Surgery for Tuberculosis. C. E. Folsome and C. D. Kuntze.—p. 1319.

Concurrent Association of Trichomonas Vaginalis, Filiform Bacillus of Döderlein and Syringospora in Pregnancy. L. G. Feo.—p. 1330.

Delivery of Quadriplegic Patient Confined to Respirator. D. E. Nilsson. —p. 1334.

X-Ray Diagnosis of Uterine Disorders.—Hysterosalpingography has not come into general use, because of the complications and fatalities caused by the iodized oils. With the discovery of aqueous radiopaque mediums for use in excretory urography a safe material presented itself for hysterosalpingography. Davids states that at the gynecological service of Mount Sinai Hospital, in New York, over 3,000 hysterosalpingograms have been made with relatively few complications. The patient is placed in a lithotomy position on a table equipped with a Bucky diaphragm. After a preliminary film of the abdomen and the pelvis a bivalve speculum is inserted into the vagina and the cervix is exposed and painted with an antiseptic. The anterior lip of the cervix is grasped with a tenaculum and a sound introduced into the uterine cavity to note its direction and depth. The iodized material is injected into the cervical canal by a syringe attached to an insufflation cannula equipped with a rubber acorn tip. Occlusion of the external cervical os is obtained by pressure with the acorn tip. Opaque material is injected slowly and films are taken after the injection of 1, 2, or 4 cc. of the dye. A film in the oblique position, taken after the last injection, facilitates the demonstration of lesions on the posterior uterine wall which might otherwise escape detection. The method is contraindicated in acute and subacute pelvic inflammatory disease, intrauterine gestation, cervicitis with purulent discharge, and uterine bleeding. The following

conditions have been demonstrated by hysterography: endometrial polyps, submucous and intramural fibroids, hyperplastic endometrium, adenomyosis, fundal carcinoma, tuberculous endometritis, congenital anomalies of uterine cervix and fundus, cervical strictures, chronic endocervicitis, and pregnancy and retained secundines. Extravasation of opaque medium into the uterine and pelvic vascular system occurred in 2% of the patients. Since the medium is water soluble, there was no untoward reaction. It is only when large amounts of the opaque medium are employed for outlining the uterine tubes that pain results owing to spill into the peritoneal cavity or owing to distention of the uterus and tubes under pressure. Embolization and granulomas do not occur, since there is rapid absorption of the water-soluble dyes. Allergic phenomena occurred in very rare instances and were easily controlled. Pelvic inflammatory reactions occurred only when a subacute or chronic salpingitis was reactivated.

Testicular Feminization in Male Pseudohermaphrodites.—Morris discusses a clinically recognizable syndrome found in patients who are essentially normal-appearing women, but who have undescended testes in place of ovaries. These patients are actually male pseudohermaphrodites, but the term "pseudohermaphroditism" usually connotes congenital abnormalities of the external genitals resulting in confusion of the sex. The patients under discussion are of a typical feminine appearance with secondary sex characteristics and show female external genitals. Frequently the patients have been married with marital satisfaction, and no complaint except of sterility. Morris presents the histories of two cases, one observed in a Massachusetts hospital and the other in Stockholm, Sweden. He lists the following as the most significant features of such cases: 1. Female habitus, breast development, and other secondary sex characteristics. 2. Scanty or absent axillary or pubic hair in most cases. 3. Female external genitals, with a tendency to underdevelopment of labia, and a blind-ending vagina. 4. Absence of internal genitals except for rudimentary anlage and for gonads which may be located intra-abdominally or along the course of the inguinal canal. 5. Gonads histologically consistent with undescended testes. 6. Urinary excretion studies suggest that such testes produce estrogen and androgen. Elevated urinary gonadotropins have also been found. From the psychosexual aspect these patients are definitely female. As in all intersexes, there seems to be an unusually high incidence of psychosis and suicide, especially when the patient has commenced to suspect that she is abnormal. Owing to the role of these gonads in producing female development, it would seem justifiable to leave them in place until such development has occurred. If seen during puberty it might be worth while providing supplementary estrogen to see if more complete feminization could be obtained such as development of the vulva and production of pubic hair, and to see if the stature and build could be made more typically female by earlier epiphyseal closure. After adolescence surgical removal appears advisable to avoid the very real danger of neoplasia. In addition to adenomas and cysts there were seven malignant tumors in the 82 cases collected.

American Journal of Ophthalmology, Chicago

36:765-894 (June [Part 1]) 1953. Partial Index

Surgical Correction of Blepharoptosis. R. N. Berke.—p. 765.
Uptake of Radioactive Phosphorus by Normal and Neoplastic Ocular Tissues. E. B. Dunphy and B. Selverstone.—p. 774.
Effect of Hyaluronidase on Therapeutic Efficacy of BAL Applied to Rabbit Cornea. C. Harris and B. S. Cohen.—p. 777.
Curare Akinesia in Cataract Operations. J. W. Henderson.—p. 781.
Present Technique and Results of Use of Curare in Ocular Surgery. J. I. Barraquer. Moner.—p. 789.
Examination of Cornea with Phase-Contrast Microscope. J. Francois and M. Rabaey.—p. 799.
Clinico-Pathology of Ocular Foreign Bodies. B. A. Roberts and A. Schlossman.—p. 803.
Technique of Corneal Transplantation. L. Daily Jr. and R. K. Daily. —p. 813.
New Surgical Approach to Myopia. T. Sato, K. Akiyama and H. Shibata.—p. 823.
Anomalous Projection: Its Incidence, Factors in Development, Characteristics, Tests, and Treatment of 146 Surgically Treated Strabismus Cases. N. S. Jaffe.—p. 829.

American Journal of Public Health, New York

43:523-664 (May) 1953. Partial Index

Importance of Food in Preventive Medicine. C. A. Elvehjem.—p. 523.
*Studies of Bathing Water Quality and Health. A. H. Stevenson.—p. 529.
Brucellosis, Diabetes, and Liver Deficiency. A. P. Leon and N. Aguirre. —p. 539.
Study of Follow-Up of Poliomyelitis Patients. H. M. Wallace, P. Heely, M. A. Losty and H. Rich.—p. 542.
Public Health Aspects of Electronic Food Sterilization. J. T. R. Nickerson, B. E. Proctor and S. A. Goldblith.—p. 554.
Development of Cardiac Control Program in Georgia. J. G. Barrow. —p. 572.
Domiciliary Medical Care and Voluntary Teaching Hospital. H. J. Bakst.—p. 589.
Teachers' Health—Findings and Recommendations. R. Zindwer.—p. 609.

Bathing Water Quality and Health.—A series of field studies were undertaken to determine the relationship between natural bathing water quality and its effect upon the health of the bather. The aims were to determine what relative increase in illness incidence might be expected from swimming in the cleanest waters and in water containing various degrees of bacterial pollution. Consideration was not given to the less tangible aspects of outdoor swimming, such as fresh air, mental relaxation, moderate amounts of sunshine, physical exercise, etc. The locations were Lake Michigan at Chicago, Ill., the Ohio River at Dayton, Ky., and a nearby swimming pool in the same area; and Long Island Sound at New Rochelle and Mamaroneck, N. Y. The studies demonstrated that an appreciably higher over-all illness incidence may be expected in the swimming group over that in the nonswimming group regardless of the bathing water quality. Eye, ear, nose, and throat ailments may be expected to represent more than half of the over-all illness incidence, gastrointestinal disturbance up to one-fifth, and skin irritations and other illnesses the balance. Specific correlation between illness incidence and bathing in waters of a particular bacterial quality was observed in two instances. This evidence should not be taken as conclusive, however, since a complete analysis of the effect that weather might have had on the result was not possible, but the apparent relation between illness and bacterial quality does provide a warning signal. Despite the relatively low incidence of gastrointestinal disturbance, swimming in river water having a median coliform density of 2,700 per 100 ml. appears to have caused a significant increase in such illnesses among the swimmers. Admitting the difficulties of conducting studies in which nature rather than man controls many of the variables, sufficient evidence is available to indicate that some of the strictest bacterial quality requirements for natural bathing water now existent might be relaxed without significant detrimental effect on the health of the bathers.

43:665-820 (June) 1953. Partial Index

*Occurrence of Histoplasmosis in Epidemics—Epidemiological Studies. J. T. Grayston and M. L. Furcolow.—p. 665.
Appraisal of Water-Borne Fluoride—Dental Caries Relationship. F. S. McKay.—p. 700.
Some Reflections on Epidemiology of Fluorine and Dental Health. H. T. Dean.—p. 704.
Antigenic Fractions of Histoplasma Capsulatum. C. C. Campbell.—p. 712.
Age Relationship of Cases of Pulmonary Tuberculosis and Their Associates. A. B. Robins.—p. 718.
Control of Tuberculosis in Chile, 1952. H. Romero and J. Vildosola. —p. 724.
Diarrheal Diseases in Fresno County, California. J. Watt, A. C. Hollister Jr., M. D. Beck and E. C. Hemphill.—p. 728.
Saskatchewan Experience in Payment for Hospital Care. F. B. Roth, G. W. Myers, F. D. Mott and L. S. Rosenfeld.—p. 752.
United Mine Workers of America Welfare and Retirement Fund Medical Care Probram. W. F. Draper.—p. 757.

Epidemics of Histoplasmosis.—This report is based on 13 epidemic outbreaks of histoplasmosis. Grayston and his coworkers find that with the exception of the generalized variety, histoplasmosis is predominantly a pulmonary infection. The theory that the usual mode of infection is by inhalation gains support from the nature of the disease and from the apparent mode of infection in this series of epidemics. In many of the epidemics it was found that exposure to dust created by agitation of material proved to contain Histoplasma spores resulted, after from one to three weeks, in illness associated with numerous discrete pulmonary infiltrations. A correlation

between the number of the lesions and the severity of the illness on the one hand and the length and intensity of the dusty exposure on the other was established both between epidemics and within a given epidemic. The x-ray picture of numerous discrete pulmonary infiltrations would appear to represent numerous primary lesions caused by inhalation of a large number of spores with their deposition in many alveoli. The frequent association with animal excreta is of interest. The excreta probably merely contributed to a good growth condition rather than indicating an animal carrier. The involvement of wood as a vehicle of infection in four of the epidemics further emphasizes its position as possibly important to the growth of Histoplasma in nature. Infections with histoplasmosis contracted in laboratories indicate that infection with Histoplasma, whether of clinical significance or not, provides resistance to reinfection. The findings in 12 of the 13 epidemics are consistent with this view.

American Journal of Surgery, New York

86:1-124 (July) 1953

Freeze-Dried Aortic Grafts: Preliminary Report of Experimental Evaluation. J. W. Pate and P. N. Sawyer.—p. 3.
Analysis of Anesthetic Safeguards: Report of National Survey. H. W. Schweizer and P. M. Wood.—p. 14.
Cardiac Arrhythmias During Anesthesia: Comparison of Cyclopropane and Pentothal-Nitrous Oxide-Ether Anesthesia. J. L. Eisaman, H. D. Caylor, C. E. Jackson and H. Roe.—p. 23.
*Emergency Infracostal Approach for Cardiac Arrest. D. J. Wexler, F. Bromberg and A. Kohn.—p. 29.
Pheochromocytoma. J. L. DeCourcy.—p. 37.
Nephrectomy and Hypertension: Experience in One Urologic Clinic. S. J. Okulicz and V. F. Marshall.—p. 45.
New Method of Estimating Blood Loss During Surgery. F. Cole.—p. 50.
Rhinoplasty: Psychogenic Adjunct in Treatment of Vasomotor Rhinitis. L. W. Eisenstodt.—p. 53.
Neurosurgical Procedures for Relief of Intractable Pain. S. W. Gross.—p. 58.
Peripheral Nerve Surgery: Incisions for Exposures of Peripheral Nerves. C. Pollard Jr. and E. G. Grantham.—p. 61.
*Regional Enteritis: Results of Surgical Treatment. L. T. Palumbo and S. C. Wittmer.—p. 70.
Mesentericoparietal Hernia: Report of Three Cases. R. C. Giles, E. Del Beccaro, W. Klingensmith and H. Trace.—p. 75.
Painful Scars. R. J. Behan.—p. 81.

Emergency Infracostal Approach in Cardiac Arrest.—The high mortality in cases of cardiac arrest is due to delay on the part of the anesthetist in making the diagnosis and on the part of the surgeon in acting after the condition has been called to his attention. Minutes or even seconds may mean the difference between life and death. When cardiac arrest occurs during the course of an open chest operation, massage of the heart presents no great problem. It is in surgery elsewhere in the body that the problem of the quickest and most adequate emergency approach to the heart arises. Apart from the thoracic approach, the best known methods involve opening the peritoneum through a median epigastric incision and massaging the heart through the intact diaphragm, and when necessary, opening the diaphragm for more adequate exposure. The authors describe and illustrate with diagrams the infracostal approach for manual massage of the heart in cardiac arrest, and discuss the adjuvant measures useful in cardiac resuscitation. This emergency may arise in any surgical intervention. The infracostal approach, once learned, can be used with little hesitation by those unaccustomed to working in the thoracic or abdominal cavities. The method involves entering the chest through a left subcostal incision which allows access to the heart through a natural plane of cleavage lying posterior to the posterior rectus sheath and transversus abdominis muscle, and anterior to the peritoneum adjacent to the xiphisternal junction. Brief reports of the nine cases of cardiac arrest which occurred at the Southside Hospital, New York, in the past four years are presented, together with the plan of action which has been developed.

Regional Enteritis: Surgical Treatment.—The disease process of regional enteritis, which has been described also under such terms as regional ileitis, terminal ileitis, chronic cicatrizing enteritis, segmental enteritis, nonspecific granuloma of the intestine, chronic ulcerative ileitis, Crohn's disease, chronic enteritis, ileocolitis and pseudocancer, is nonspecific and the etiology is still obscure. It may involve any segment of the small bowel and/or the right half of the colon. The disease progresses through several stages. In the advanced stages a one-stage resection of the portions of bowel involved and an ileotransverse colostomy appears to be the treatment of choice. In poor risk patients and/or in those cases in which the disease process cannot be resected with safety, a short-circuiting operation consisting of complete ileal exclusion with an ileotransverse colostomy is the procedure of choice. It is suggested that this condition, as well as ulcerative colitis, nonspecific granuloma of the colon and peptic ulcer, may be initiated by an imbalance of portions of the autonomic nervous system. Upon this basis the favorable effects of vagotomy as reported by several clinicians may be explained. The authors are of the opinion that a right vagus resection inferior to the origin of the gastric branches, a bilateral splanchnicectomy, a lower dorsal and upper lumbar sympathectomy, and an excision of the left presacral parasympathetics would be a more logical procedure. Sixteen cases of regional ileitis are presented. In the early stages of the disease an appendectomy was performed in four patients during the acute episode. In the advanced group an ileal exclusion with an ileotransverse colostomy was performed in half of the patients, and in the others a one-stage resection of the diseased small bowel and right colon with an end-to-end ileotransverse colostomy was accomplished. There were no deaths and no recurrences.

Annals of Surgery, Philadelphia

137:781-926 (June) 1953

Splenic Cysts with Report of Case of Large Unilocular Cyst of Rapid Growth. R. P. Bell Jr.—p. 781.
Massive Resection of Liver. J. K. Quattlebaum.—p. 787.
*Fibrosis of Sphincter of Oddi. R. B. Cattell and B. P. Colcock.—p. 797.
Benign Neoplasms of Extrahepatic Bile Ducts: Case Report of Cyst Causing Obstruction. R. O. Lyday.—p. 807.
Primary Carcinoma of Third Portion of Duodenum. D. H. Poer.—p. 813.
Annular Pancreas Producing Duodenal Obstruction. H. Wilson and J. H. Bushart.—p. 818.
Relation Between Internal Jugular Vein Pressure and Cerebrospinal Fluid Pressure in Operation of Radical Neck Dissection. H. P. Royster.—p. 826.
Tissue Reactions to Tantalum Gauze and Stainless Steel Gauze: An Experimental Comparison. A. R. Koontz and R. C. Kimberly.—p. 833.
*Fifteen-Year to Forty-Year Survival Rates Following Radical Mastectomy for Cancer of Breast. S. W. Harrington.—p. 843.
Subaxillary Incision for Radical Mastectomy. W. F. MacFee.—p. 850.
Surgical Experience with Mammary Cancer: Growth Characteristics Observed During Treatment of 258 Private Patients with Breast Cancer. J. V. Goode and J. A. Martin.—p. 856.
Certain Preventable Errors in the Diagnosis and Management of Carcinoma of Stomach and Lung. F. F. Boyce.—p. 864.
Vagotomy and Gastro-Enterostomy—Vagotomy and Conservative Gastrectomy: Comparative Study. L. W. Edwards and J. L. Herrington Jr.—p. 873.
Improvement of 180 Per Cent in Five-Year Survival Rate of Patients with Carcinoma of Stomach. W. Walters and J. Berkson.—p. 884.
Relation of Gastric Ulcer to Carcinoma of Stomach. S. F. Marshall.—p. 891.
Gastric Ulcer and Gastric Cancer. I. S. Ravdin and R. C. Horn Jr.—p. 904.
Contact Splints (Eggers) Vs. Standard Bone Plates in Fixation of Experimental Fractures. J. A. Key and F. C. Reynolds.—p. 911.

Fibrosis of Sphincter of Oddi.—Cattell and Colcock of the Lahey Clinic point out that fibrosis of the sphincter of Oddi may be responsible for some of the symptoms in patients with cholelithiasis. It can best be demonstrated during exploration of the common duct. It may be overlooked unless exploration of the common bile duct is employed frequently during operations for cholelithiasis. At the Lahey Clinic exploration of the common bile duct is done in slightly less than half of all patients operated on for cholelithiasis, and approximately 20% of patients are found to have stones in the common bile duct. This high rate of exploration of the common duct has led to the discovery of an appreciable number of obstructions at the ampulla of Vater. The following methods are available as aids to the discovery of obstruction to the lower end of the common duct: (1) manometric pressure studies, (2) cholangiography, (3) operative exploration of the common bile duct, and (4) transduodenal exploration. Unrecognized fibrosis of the sphincter or stricture of the papilla may be responsible for recur-

rence or persistence of symptoms following cholecystectomy and may necessitate a secondary operation. The authors analyze observations on 49 patients with fibrosis of the sphincter or stricture of the papilla. These patients were selected after a careful study of the histories of a much larger group in whom the possibility of fibrosis was considered. Those cases in which the diagnosis was not substantiated, was indefinite or was questioned by the operating surgeon were excluded. The symptoms encountered in this selected group included all of those commonly associated with calculi in the biliary tract. The most conspicuous clinical feature was the occurrence of intermittent attacks of severe, right upper quadrant or upper abdominal pain, with the typical radiation to the back and to the shoulder. These attacks were frequently associated with anorexia, nausea, and vomiting. Forty-two of the 49 patients complained of these attacks. Twenty-seven patients gave a history of intermittent or persisting jaundice following the attacks of abdominal pain. Seven patients gave a history of chills and fever. With the demonstration of fibrosis of the sphincter, the operative procedures carried out in these 49 cases were as follows: forcible dilatation of the sphincter was performed in 35 patients, and in these a long T tube was inserted. Transduodenal sphincterotomy was performed in 10, and in each of these the long T tube was utilized. Dilatation of the sphincter with implantation of a short T tube was carried out in three patients. In one patient, choledochoduodenostomy was performed since a previous subtotal gastrectomy had been carried out. There was no operative mortality. Only two subsequent deaths have occurred, one a year later from chronic relapsing pancreatitis and pancreatolithiasis, and the second from carcinoma of the common duct. Complete relief of symptoms was obtained in 90% of the cases.

Survival Following Mastectomy.—Statistical studies were made on women on whom a radical mastectomy was performed at the Mayo Clinic for carcinoma of the breast from 1910 through 1934, with compiling of 15 to 40 year survival rates. Harrington was interested in determining certain factors that influence the prognosis as shown by the survival rates following operation. The prognosis of carcinoma of the breast following radical mastectomy appears related to many different factors, some of the more important of which are (1) the extent of the malignant involvement at the time of operation, (2) the degree of malignancy as shown by microscopic examination of the primary lesion, (3) the presence of other associated conditions such as pregnancy and lactation, (4) the general constitutional diseases such as diabetes, and (5) the age of the patient. The author knows of no method of determining what the prognosis will be in any individual case. Many patients have obtained the opinion that they are "cured" of malignant disease if, on examination five years after operation, no evidence of the malignant disease is found. A study of long term survival rates shows that local recurrence or metastatic lesions may occur 15 or more years after the operation. The cases available for the first tabulation numbered 4,637 patients with unilateral carcinoma of the breast on whom radical mastectomy was performed in 1934 or earlier; of these 4,563 (98.4%) were traced. Of patients traced for the respective number of years, 1,144 (25.1%) survived 15 or more years, 624 (17.6%) survived 20 or more years, 301 (12.6%) survived 25 or more years, 128 (9.3%) survived 30 or more years and 35 (6.9%) survived 35 to 40 qears. Of the 4,563 traced patients, 2,918 (63.9%) were found to have axillary nodal metastasis at the time of operation and 1,645 (36.1%) did not reveal nodal metastasis. Of the 2,918 who had axillary nodal metastasis, 351 (12.0%) lived 15 or more years, and of the 1,645 without axillary nodal metastasis, 793 (48.2%) lived 15 or more years. The author concludes that studies on long term survival rates following radical mastectomy for carcinoma of the breast show that it is impossible to determine definitely the prognosis in an individual case either before or at the time of the operation, and that patients with unilateral high grade malignant growths with metastasis as well as patients who develop a malignant growth in the remaining breast with metastasis subsequently may survive many years following operation.

Arch. of Physical Medicine & Rehabilitation, Chicago

34:411-458 (July) 1953

Work Program for the Disabled Housewife. E. L. Kristeller.—p. 411.
Assistive Activities for the Custodial Type Patient. H. Hoberman and E. F. Cicenia.—p. 418.
*Temperatures Produced in Bone by Various Methods Used in Ultrasonic Therapy: An Experimental Study. L. F. Bender, J. F. Herrick and F. H. Krusen.—p. 424.

Temperatures Produced in Bone by Ultrasonic Therapy.—The femurs of anesthetized adult dogs were exposed to ultrasonic energy by various techniques of application. In one technique, the source of ultrasound was held stationary and the energy was either continuous or pulsed; in another technique, the source of ultrasound was moved back and forth over the desired area using only continuous energy. The temperatures of the cortex and marrow of the femur were measured by means of thermocouples. Extremely high temperatures were produced when the sound head was stationary and the energy was continuous. Pulsed energy provided a means of controlling the rise in temperature rather well. Stroking application of the continuously emitted ultrasonic energy provided the best control of the heating effect with the widest margin of safety. Ultrasound is used extensively in some European clinics, but since early investigations at the Mayo Clinic showed that dangerously high temperatures may be produced in the bones of experimental animals during short exposures to ultrasonic therapy, it was imperative to learn how to control these high temperatures before the therapeutic use of ultrasound could be considered.

Arizona Medicine, Phoenix

10:215-246 (June) 1953

Tumors of Mediastinum. D. State.—p. 218.
Treatment of Common Forms of Arthritis. L. M. Locie.—p. 221.

10:247-278 (July) 1953

Large Spontaneous Gastrocolic Fistula Due to Carcinoma of Transverse Colon. H. P. Limbacher.—p. 247.
Evaluation of Modern Drug Therapy. L. M. Lockie.—p. 249.

Blood, New York

8:587-678 (July) 1953

Electron Microscopic Studies of Action of Thrombin on Blood Platelets. E. De Robertis, P. Paseyro and M. Reissig.—p. 587.
*Hemophilia-Like Disease Following Pregnancy with Transplacental Transfer of an Acquired Circulating Anticoagulant. P. G. Frick.—p. 598.
Hemolytic Disease of the Newborn Infant Caused by Maternal Sensitization to Blood Factor hr (c): Report of Two Cases with Special Reference to the Etiologic Significance of Multiple Blood Transfusions in Rh Positive Women Prior to Gestation. J. Grundorfer.—p. 609.
Hemolytic Disease of the Newborn Due to Anti-A. H. Crawford, M. Cutbush and P. L. Mollison.—p. 620.
Immunologic Specificity of Antiserum for Trypsin-Treated Red Blood Cells and Its Reactions with Normal and Hemolytic Anemia Cells. M. C. Dodd, C.-S. Wright, J. A. Baxter and others.—p. 640.
Life Span of Marmot Erythrocyte. K. C. Brace.—p. 648.
Production of Nucleophagocytosis by Rabbit Antileukocytic Serum. H. J. Zimmerman, J. R. Walsh and P. Heller.—p. 651.
Effect of a Series of Ethylenimine Derivatives on Myeloid Chloroleukemia in the Rat. S. J. Sparks, M. L. Stevens, M. J. Landes and others.—p. 655.
Bone Marrow Aspiration in the Monkey (Macacus Rhesus). B. S. Cohen.—p. 661.
Case Report: Paroxysmal Nocturnal Hemoglobinuria with Development of Aplastic Anemia. M. G. Nelson and J. H. Bruce.—p. 664.

Hemophilia-like Disease Following Pregnancy.—In a woman, aged 24, who had been in good health until August, 1949, a large hematoma developed over the right elbow after a minor trauma. One week later a painful hematoma appeared over the dorsum of her left foot. This was evacuated by her physician. The incision did not heal promptly because of continuous bloody oozing for three weeks. Several superficial and deep hemorrhages occurred in all extremities. The patient had given birth to a normal male infant three months before the onset of the present illness. There was no unusual immediate postpartum hemorrhage, but she had some vaginal blood loss for about one month. About three months after the onset of the disease, the patient had a partial clinical remission up to the time of her second pregnancy, which

seemed to take a normal course until two weeks before the expected term, when gross hematuria developed, as well as extensive subcutaneous hemorrhages. A male infant, weighing 4,100 gm., was delivered on Nov. 6, 1950. From the second day after the delivery the patient bled for 41 days more or less profusely from vagina, necessitating transfusion of 89 units of blood (500 cc. each) in addition to 15 units of fresh serum. Administration of corticotropin and of stilbestrol had no effect on the hemorrhagic tendency. The patient underwent x-ray sterilization one week after cessation of the protracted hemorrhage. The failure of the fresh blood to influence the patient's coagulation mechanism led to the suspicion of a circulating anticoagulant, which was demonstrated by the direct method of Conley. This anticoagulant probably inhibited the antihemophilic globulin. The anticoagulant was demonstrated in the patient's second child during the first two and one-half months of life. The transplacental transfer of the anticoagulant and the similarity of this condition to hemophilia (resistant to therapy) following iso-immunization against antihemophilic globulin strongly suggest that an immunologic mechanism accounts for this abnormality. The patient recovered 18 months after her second delivery and 16 months after x-ray sterilization. The possible relation of the recovery to the sterilization remains unknown.

California Medicine, San Francisco

79:1-72 (July) 1953

Gamma Globulin: Status of Availability for Prevention of Poliomyelitis. W. L. Halverson and R. M. Drake.—p. 1.
The Growing Problem of Suicide. R. A. Kern.—p. 6.
Differential Diagnosis of Operable Disease of Esophagus. B. B. Roe.—p. 11.
Diseases and Deaths: A Statistical Survey of 40,130 Autopsies at the Los Angeles County General Hospital, 1918 to 1948—Part II. E. Bogen, O. View and E. M. Butt.—p. 16.
Injuries of Musculotendinous Cuff of Shoulder. D. W. Blanche.—p. 20.
Biological Warfare. J. Beeston.—p. 25.
Attitudes Toward Specific Therapies. G. G. Jampolsky.—p. 29.
Psychiatric Contraindications to Pregnancy with Reference to Therapeutic Abortion and Sterilization. J. M. Kummer.—p. 31.
Exercise Test in Electrocardiography: Detection of Coronary Artery Disease. M. F. Leeds and S. S. Kroopf.—p. 36.
Palm Thorn Injuries: Difficulty in Diagnosis of Late Sequelae. L. Cozen and M. Fonda.—p. 40.
The Prognosis in Cataract Operations: A Correlation of Preoperative Appraisal with Results. W. A. Pettit.—p. 42.

Delaware State Medical Journal, Wilmington

25:127-148 (June) 1953

Dermatology and the Chiropodist. R. Friedman.—p. 127.
Role of Chiropodist in Diabetes. A. Sindoni Jr.—p. 132.
Some Unorthodox Views on Atherosclerosis. O. J. Pollak.—p. 138.

Endocrinology, Springfield, Ill.

52:611-730 (June) 1953. **Partial Index**

Bioassay of Gluco-Corticoid Activity by Mouse Glycogen Method: Some New Facts. J. A. Nissim.—p. 611.
Method of Assay of Sodium-Retaining Factor in Human Urine. B. Singer and E. H. Venning.—p. 623.
*Comparison of Effects of Cortisone Administered Intraperitoneally and Subcutaneously in Rat. F. S. Greenspan, H. Gifford and Q. B. Deming.—p. 638.
Effect of Prolonged Local Treatment with Adrenocortical and Sex Steroids on Intradermal Spreading Action of Hyaluronidase. M. A. Hayes.—p. 646.
Effect of Hypophysectomy on Regeneration of Liver After Partial Hepatectomy in Dogs. T. M. Astarabadi, H. E. Essex and J. H. Grindlay.—p. 652.
Studies on Rates of Involution and Reconstitution of Lymphatic Tissue. J. A. Frank, L. F. Kumagai and T. F. Dougherty.—p. 656.
Chemical Transformation of Steroids by Adrenal Perfusion: Perfusion Methods. O. Hechter, R. P. Jacobsen, V. Schenker and others.—p. 679.
Thyroid Stimulating Hormone of Anterior Pituitary as Distinct from Exophthalmos Producing Substance. B. M. Dobyns and S. L. Steelman.—p. 705.

Comparison of Effects of Cortisone Administered Intraperitoneally and Subcutaneously.—Greenspan and associates administered cortisone acetate intraperitoneally and subcutaneously to adult male and female rats in doses of 1.25 to 3.75 mg. daily for periods of 40 to 48 days. Subcutaneously administered cortisone acetate produced the expected loss in body weight, and atrophy of the thymus and adrenal cortex. The same dosage of cortisone acetate intraperitoneally did not cause weight loss and produced no atrophy of the adrenals or of the thymus. The duration of the effect of a single dose of cortisone was then studied by following the urine output of rats which had been subjected to adrenalectomy and a daily water load. It was found that the intraperitoneal administration of cortisone acetate had an immediate and rapid effect on the restoration of water diuresis in these rats, whereas the subcutaneous administration of cortisone acetate had a slower and more prolonged effect. The data suggest that certain effects of cortisone acetate, such as weight loss and atrophy of thymus and adrenal cortex, may require a sustained corticoid level, as may be produced by subcutaneous administration of the drug. Other metabolic effects, such as the restoration of water diuresis in rats deprived of their adrenals and subjected to water tolerance tests, occur rapidly following intraperitoneal administration of cortisone acetate, but, perhaps because of the shorter duration of the effective corticoid level, there is no inhibition of growth or production of adrenal atrophy.

Florida Medical Association Journal, Jacksonville

40:1-72 (July) 1953

Ocular Neuroses. G. T. Gwathmey.—p. 15.
Are Speeding, Open Sirens and Red Light-Breaking by Ambulances Necessary? L. L. Parks.—p. 20.
Detection and Management of Retrolental Fibroplasia: Plan for Average Hospital and Staff. C. D. Benton Jr.—p. 23.
*Sarcoidosis of Myocardium: Report of Case. L. M. Sales.—p 27.
Sprains and Strains Treated with Ultrafaradic M-4 Impulse Generator. G. R. Crisler.—p. 32.

Sarcoidosis of Myocardium.—Sales reports a case of Boeck's sarcoid involving the myocardium, which brings to 18 the number of cases reported in the literature. The important data on the 18 cases are presented. The author's patient, a man, aged 20, was hospitalized on Aug. 9, 1948, complaining of abdominal distention, cough, productive of minimal amounts of white, frothy sputum, episodes of nocturnal dyspnea or orthopnea, and weakness of 1½ months' duration. Intermittent pedal edema was first noticed about two weeks prior to admission. Thereafter, the patient had mild anorexia and some febrile episodes. There was a 10 lb. (4.5 kg.) weight loss in one month. The patient gave a history of acute iritis in 1947 while in service in Korea, at which time a lymph node biopsy revealed Boeck's sarcoid. He denied venereal disease. He had episodes when his joints became hot, swollen and tender, the knee and ankle joints being those mostly involved. There was sinus tachycardia, and roentgenography of the chest revealed that the cardiac silhouette was enlarged in the transverse diameter, showing accentuation of the left auricular curve and increased rounding of the apex. A moderate degree of hypervascularity was present in the hilar region and at both bases. Both hands presented areas of osteolysis in several fingers. An electrocardiogram showed myocardial damage. The patient was kept semiambulant, and the temperature was normal. On the morning of the ninth day after admission, he complained of dyspnea and was advised to stay at bed rest. Shortly before noon, he had a sudden episode of severe dyspnea with coughing, productive of a cupful of blood. The dyspnea continued to increase, and he was placed in an oxygen tent at absolute rest. Rapid digitalization was carried out. About 2 p. m. complete vascular collapse occurred, from which the patient did not recover despite supportive measures. He died on the morning of the following day. A postmortem examination revealed chronic myocarditis (infiltration by sarcoidosis of Boeck), Boeck's sarcoidosis of tracheobronchial lymph nodes, passive congestion of lungs, and focal necrosis of liver. The consensus among authors, who have investigated this subject, is that death in cardiac involvement by sarcoidosis is usually due to extensive infiltration of the myocardium, with resultant fibrosis and cardiac failure.

Journal of Clinical Investigation, New York

32:459-616 (June) 1953. **Partial Index**

Effects of Aging, Arteriosclerosis, and Hypertension Upon Cerebral Circulation. H. A. Shenkin, P. Novak, B. Goluboff and others.—p. 459.
Colorimetric Determination of Serum Cholinesterase: Its Value in Hepatic and Biliary Tract Diseases. M. H. Sleisenger, T. P. Almy, H. Gilder and G. Perle.—p. 466.
Studies on Proteolytic Enzyme in Human Plasma: IX. Fibrinogen and Fibrin as Substrates for Proteolytic Enzyme of Plasma. O. D. Ratnoff. —p. 473.
Action of Hydrocortisone in Synovial Inflammation. R. A. Jessar, M. A. Ganzell and C. Ragan.—p. 480.
Chloride, Bromide, Sodium, and Sucrose Spaces in Man. J. L. Gamble Jr., J. S. Robertson, C. A. Hannigan and others.—p. 483.
Pulmonary Physiology of Normal Individuals Living at Altitude of One Mile. L. L. Anderson, M. L. Willcox, J. Sillman and S. G. Blount Jr. —p. 490.
Studies in Phosphorus Metabolism in Man: III. Distribution, Exchange and Excretion of Phosphorus in Man Using Radioactive Phosphorus (P^{32}) as Tracer. S. M. Levenson, M. A. Adams, H. Rosen and F. H. L. Taylor.—p. 497.
Pulmonary Function in Mitral Valvular Disease: Distribution and Diffusion Characteristics in Resting Patients. D. Carroll, J. E. Cohn and R. L. Riley.—p. 510.
Effect of Portacaval Shunt on Estimated Hepatic Blood Flow and Oxygen Uptake in Cirrhosis. S. E. Bradley, C. M. Smythe, H. F. Fitzpatrick and others.—p. 526.

32:617-690 (July) 1953

Lobar Alveolar Gas Concentrations: Effect of Body Position. C. J. Martin, F. Cline Jr. and H. Marshall.—p. 617.
Effects of Carbonic Anhydrase Inhibitor "6063" on Electrolytes and Acid-Base Balance in Two Normal Subjects and Two Patients with Respiratory Acidosis. J. Nadell.—p. 622.
*Studies on Prevention of Rheumatic Fever: Effect of Time of Initiation of Treatment of Streptococcal Infections on Immune Response of Host. L. L. Brock and A. C. Siegel.—p. 630.
Depressor Effects of Potassium-Deficient Diets in Hypertensive Man. G. A. Perera.—p. 633.
Characteristics of Thoracic Duct Lymph in Man. H. R. Bierman, R. L. Byron Jr., K. H. Kelly and others.—p. 637.
Studies in Intravascular Coagulation: II. Comparison of Effect of Dicumarol and Heparin on Clot Formation in Isolated Venous Segments. S. Wessler.—p. 650.
Effects of 1-Hydrazinophthalazine on Cerebral Blood Flow, Vascular Resistance, Oxygen Uptake and Jugular Oxygen Tension in Hypertensive Subjects. J. H. Hafkenschiel and C. K. Friedland.—p. 655.
Quantitative Fractionation of Component Proteins of Human Serum with Cationic Detergents. R. F. Jacox.—p. 661.
Peptidases in Human Serum: Comparison of Activities Between Normal Persons and Patients with Liver Diseases and Other Pathologic Conditions. G. A. Fleisher and H. R. Butt.—p. 674.
Erythematogenous Action of Ultraviolet Light on Human Skin: I. Some Measurements of Spectral Response with Continuous and Intermittent Light. P. B. Rottier.—p. 681.

Prevention of Rheumatic Fever: Immune Response in Streptococcic Infections.—Penicillin treatment of acute streptococcic pharyngitis results in a marked suppression of antibody formation. Studies were made on patients fulfilling the following criteria: the presence of exudative pharyngitis, history of onset of symptoms less than 31 hours before admission, and subsequent isolation of group A streptococci from the initial throat culture. Patients with a past history of rheumatic fever or chorea were excluded. A throat culture and a serum specimen were obtained from each patient at the time of admission and on the 14th, 21st, and 28th days from the onset of symptoms. Bacteriological and serological studies were performed. Antistreptolysis "O" titers were determined on all serums from each patient, and all tests were performed with the same lot of streptolysin and read by the same observer. Each of the 349 patients studied was assigned to one of four treatment groups according to a random sequence previously determined by a shuffled deck of cards. It was found that there is a correlation between the time of institution of penicillin therapy and the degree of suppression of antistreptolysin formation: the earlier the treatment the greater the suppression. Therapy, begun not later than 31 hours after the onset of symptoms of streptococcic pharyngitis, reduces the subsequent antistreptolysin response at 21 days by approximately 60%, while therapy begun five days after the onset of symptoms results in a 40% suppression. These observations support the hypothesis that the antigenic challenge during acute streptococcic pharyngitis occurs gradually, over a period of several days, and that an appreciable percentage of the total immune response develops as a result of antigen formed after the fifth day of disease. It is difficult to relate these data to the over-all problem of the prevention of rheumatic fever, since the present study was too limited to yield any direct evidence as to the effectiveness of delayed penicillin therapy in reducing the attack rate for this complication. It has been shown that there is a correlation between high convalescent antibody titers following streptococcal infections and the development of rheumatic fever. It would thus seem that early therapy of streptococcic infections would be advisable; delayed therapy, however, might exert some effect on the incidence of rheumatic fever.

Journal of Experimental Medicine, New York

98:1-98 (July) 1953. **Partial Index**

Mechanism of Action of Cortisone in Experimental Hypersensitivity: Hypersensitivity of Serum Sickness Type. F. G. Germuth Jr.—p. 1.
Histological Study of Infectious Canine Hepatitis by Means of Fluorescent Antibody. D. L. Coffin, A. H. Coons and V. J. Cabasso.—p. 13.
Morphologic Variation in Pneumococcus. R. Austrian.—p. 21.
Experimental Production of Combination Forms of Virus: I. Occurrence of Combination Forms After Simultaneous Inoculation of Allantoic Sac with Two Distinct Strains of Influenza Virus. G. K. Hirst and T. Gotlieb.—p. 41.
Chronic Sodium Chloride Toxicity in Albino Rat: II. Occurrence of Hypertension and of Syndrome of Edema and Renal Failure. G. R. Meneely, R. G. Tucker, W. J. Darby and S. H. Auerbach.—p. 71.

Journal of Infectious Diseases, Chicago

92:205-302 (May-June) 1953. **Partial Index**

Recovery of Human Enteric Pathogens on Meat from Butcher Shops in Cairo, Egypt. T. M. Floyd, J. R. Baranski and M. El-Gannani.—p. 224.
Activation of Pseudotuberculosis in Mice Exposed to Sublethal Total Body Radiation. I. L. Shechmeister and F. L. Adler.—p. 228.
Histopathology of Murine Pneumonitis Infection and Growth of Virus in Mouse Lung. F. M. Gogolak.—p. 254.
Chemotherapy of Experimental Plague in Primate Host. F. R. McCrumb Jr., A. Larson and K. F. Meyer.—p. 273.
I^{131}-Labeled Antigen Precipitation as Measure of Quantity and Quality of Antibody. D. W. Talmage and P. H. Maurer.—p. 288.

New England Journal of Medicine, Boston

248:1037-1080 (June 18) 1953

Twentieth-Century Changes in Treatment of Septic Infections. A. Fleming.—p. 1037.
Mortality of Persons with Photofluorograms Suggestive of Cardiovascular Disease. G. W. Comstock.—p. 1045.
Oral Cortisone Treatment of Infantile Eczema. L. W. Hill.—p. 1051.
*Sources of Upper Gastrointestinal Hemorrhage in Cirrhotic Patients with Esophageal Varices. E. D. Palmer and I. B. Brick.—p. 1057.
*Malignant Thymoma in Myasthenia Gravis: Report of Unusual Case with Brief Discussion of Role of Thymus in Disease. J. H. Katz.—p. 1059.
Balthazar-Foster Murmur and Foster's Rule. A. Kerr Jr. and E. D. Palmer.—p. 1064.

Gastrointestinal Hemorrhage in Patients with Esophageal Varices.—Studies were made on 150 patients; cirrhosis had been proved in 146 by needle biopsy, in 1 by peritoneoscopic biopsy, and in 3 by necropsy. There were 134 cases of portal cirrhosis, 12 of postnecrotic cirrhosis, and 4 of cirrhosis due to infection with Schistosoma mansoni. Esophagoscopy revealed esophageal varices in 95. There was a history of serious hemorrhage from the upper gastrointestinal tract in 59 patients, 47 of whom were found to have esophageal varices. Among 91 patients without a history of hemorrhage, there were 48 cases of esophageal varices. Thirty-nine per cent of the patients with a history of hemorrhage had one or more lesions of the upper gastrointestinal tract in addition to varices that could have been responsible for the hemorrhage; 20% had other potential bleeding sites. Other lesions were associated in 22% of the 95 patients with varices. Duodenal ulcer was the commonest disease accompanying varices, having been found in 10% of all patients. Gastric ulcer, hiatus hernia, and esophagitis were each demonstrated in 7 cases. Twenty-one patients died during investigation, and all were studied at autopsy. Hemorrhage was the cause of death in 11 of the 21 fatalities, and in 7 of the 11 cases the hemorrhage originated in the esophageal varices. Two patients died of hemorrhage from acute erosive gastritis, one of hemorrhage from duodenal ulcer and one of hemorrhage from leukemic infiltration of the stomach. These observations imply that when a cirrhotic patient presents himself with a massive hemorrhage, esophageal varices are not necessarily the cause. Endoscopic and radiological studies of the upper gastrointestinal tract should be carried out in each cirrhotic patient.

Malignant Thymoma in Myasthenia Gravis.—The case presented is that of a man, aged 43, in whom a diagnosis of myasthenia gravis had been made in 1949. Roentgenograms of the chest revealed a tumor mass, which on needle biopsy proved to be a metastatic transitional cell carcinoma of the pleura. The patient received 2,400 r to the upper chest, and after this improved and was well regulated with 4 neostigmine (prostigmin) tablets (15 mg.) daily. In September, 1950, the symptoms returned, and he received an additional 6,000 r to the chest. He again improved, although he had to increase his neostigmine dosage to 7 tablets a day. In the spring of 1951 the patient suffered another relapse. Another physician confirmed the diagnosis of myasthenia gravis and increased the neostigmine dose to 20 tablets daily. Thymectomy was considered, but since roentgenograms of the chest indicated a widespread malignant neoplasm, plans for thymectomy were abandoned and the patient was given a third course of x-ray therapy. In December, the patient was readmitted to the hospital in acute respiratory distress, for which he was placed in a respirator. On a regime of frequent oral and subcutaneous administration of neostigmine, he steadily improved, and at discharge two months later was able to get along without a respirator. In July he was readmitted to the hospital because of sudden inability to swallow and breathe. He became progressively weaker despite massive doses of neostigmine and octamethylpyrophosphoramid. On Sept. 17, he became increasingly cyanotic and died. Autopsy revealed a malignant thymoma, with involvement of the mediastinum, right pleura, parietal pericardium, chest wall, diaphragm and peritoneum, and radiation fibrosis of the pleura and pericardium. Much confusion was caused in this case, because biopsy of an axillary lymph node had revealed neoplastic tissue. For a time the possibility that the mediastinal mass seen by x-ray represented an independent bronchiogenic carcinoma was considered, since malignant thymomas have never been known to undergo lymphatic metastasis. The autopsy demonstrated that the "metastasis" in the axilla actually was due to erosion of the chest wall by direct extension. The involvement of the peritoneum by extension through the diaphragm is unusual. Thymus glands are found normal in about 85% of cases of myasthenia. The exact mechanism by which this disease is produced remains unclear, but there is evidence that a humoral factor interferes with transmission of the nerve impulse across the neuromuscular junction. The possible relation of this to intracellular electrolyte abnormalities and to the therapeutic use of corticotropin is discussed.

Pediatrics, Springfield, Ill.

11:569-668 (June) 1953

Serum Complement in Children with "Collagen Diseases." R. J. P. Wedgwood and C. A. Janeway.—p. 569.
*Funnel Chest: Indications for Surgery and Time of Choice for Operation. A. H. Bill Jr.—p. 582.
Ovarian Maturation and Cyst Formation in Children. D. W. Polhemus.—p. 588.
*Studies of Natural History of Herpes Simplex Infections. G. J. Buddingh, D. I. Schrum, J. C. Lanier and D. J. Guidry.—p. 595.
Treatment of Enterobiasis (Pinworm Infestation) with Diphenan,® Egressin® and Gentian Violet. R. C. Jung and P. C. Beaver.—p. 611.
Congenital Fibromyxosarcoma of Os Calcis. J. J. Slavens.—p. 617.
Thalassemia in Negroes: Report of Case of Cooley's Anemia in Negro Child. L. O. Banks and R. B. Scott.—p. 622.
Incidence of Hypertension in Poliomyelitis. M. A. Perlstein, M. B. Andelman, D. C. Rosner and P. Wehrle.—p. 628.
Hearing Test for Newborn Infants. J. B. Richmond, H. J. Grossman and S. L. Lustman.—p. 634.

Funnel Chest: Indications and Time for Operation.—The authors sent a questionnaire as to the fate of adult patients with untreated funnel chest to a group of physicians and surgeons with wide experience in diseases of the chest. The questionnaire asked what proportion of patients with severe degree of funnel chest develop cardiac, pulmonary, or psychological disability, whether the life span of such patients is shortened, and whether operative repair in childhood should be advised. Twenty-five questionnaires were answered completely enough to be useful. The majority felt that among adult patients with severe funnel chest there are some who suffer from cardiac or respiratory disability. There was a feeling that many of these patients undergo psychological trauma. Twenty-three of the 25 physicians feel that operative correction of a severe degree of funnel chest should be undertaken in childhood. Observations on eight patients operated upon by the author are reviewed. Most operations recommended in the past are modifications of the procedures described by Brown. The first, which he calls "simple" and recommends for infants, is that of freeing the inner surface of the lower portion of the sternum from its posterior attachments. The second procedure, which had been described by Garnier, consists of the removal of the backward-projecting segments of the lower costal cartilages together with the performance of a wedge osteotomy across the upper sternum to permit the sternum to come forward. Varying modifications of this latter operation include resuturing the rib ends to the sternum, with use of a transplanted-bone strut to hold the sternum forward and various methods of traction. In two infants, 6 and 10 months of age, respectively, the author used the "simple" technique of Brown and little improvement resulted. In six other patients the more radical technique was used and the results were satisfactory in the five who were between 2 and 6 years old, whereas in a boy of 15, the correction of the deformity was incomplete. The author recommends in severe cases of funnel chest radical surgical treatment when the child is between 2 and 6 years old.

Herpes Simplex Infections.—Primary herpetic gingivostomatitis has come to be recognized as one of the common infectious diseases of childhood. The virus of herpes simplex was first implicated as the etiological agent in 1938 by Dodd, Johnston and Buddingh. Buddingh and associates review studies pursued during the course of several years in the pediatric clinics and wards of Vanderbilt University Hospital. The virus of herpes simplex was isolated and identified and the specific serologic response to primary infection was demonstrated in 52 children ranging from 1 to 3 years of age. These cases provided the material required for the development of techniques and methods. In a detailed study of 12 patients the virus was recovered from the mouth and stools during the acute stage, convalescence, and for varying periods thereafter. The average time during which virus could be recovered from these sources was 23 days after the onset of the disease. Virus could not be recovered from the blood or spinal fluid, but patients were not available for study before the third day of the disease. Neutralizing antibodies to herpes simplex were first demonstrated in the serum from the fourth to seventh day of the disease. The antibodies attained a maximum level during the second or third week. The maximum antibody concentration was not maintained and dropped to relatively low levels over varying periods. Herpes simplex virus was recovered from the mouths of persons presenting no clinical evidence of herpetic infection; it was recovered from 7% of 571 normal individuals of various ages; from one infant out of 97 under 6 months of age, from 20% of 72 children of 7 months to 2 years, from 9% of 199 children 3 to 14 years of age, and from 2.5% of 185 adults. Neutralizing antibodies were demonstrated in the serum of 43% of white and 71.4% of Negro children in the 7 month to 2 year age group. In adults 90% of white and 96% of Negro individuals had antibodies to herpes in the serum. Natural active immunity appears to be established at an earlier age in the segments of the population in which the highest carrier rate was demonstrated. Neutralizing antibodies were demonstrated in the serum of 76% of white infants and in 90% of Negro infants 6 months of age and under. The placental transmission of neutralizing antibodies was demonstrated. Approximately the same level of antibody was found in the maternal and placental serums.

Psychosomatic Medicine, New York

15:187-278 (May-June) 1953. **Partial Index**

Emotional Reactions of Rheumatoid Arthritics to ACTH. J. T. McLaughlin, R. N. Zabarenko, P. B. Diana and B. Quinn.—p. 187.
Dynamically-Oriented Brief Psychotherapy: Psychocutaneous Excoriation Syndromes. An Experiment. P. F. D. Seitz.—p. 200.
Experiences in Group Psychotherapy with the Obese. B. Kotov.—p. 243.
Psychotherapy of Hospitalized Orthopedic Patient. J. M. Perman and J. Rapoport.—p. 252.

Quarterly J. Studies on Alcohol, New Haven, Conn.

14:165-362 (June) 1953. **Partial Index**

*Blood Alcohol Concentrations Resulting from Wine Drinking Timed According to Dietary Habits of Italians. E. Serianni, M. Cannizzaro and A. Mariani.—p. 165.
Sugar, Pyruvate and Acetaldehyde Levels in Blood of Alcohol Addicts After Ingestion of Dextrose. A. Varela, A. Penna, F. Alcaino G. and others.—p. 174.
First Drinking Experience of Addictive and of "Normal" Drinkers. A. D. Ullman.—p. 181.
Disulfiram as Sedative in Alcoholism. F. Lemere.—p. 197.
Pathological Intoxication, Alcoholic Hallucinosis, and Other Reactions to Alcohol: Clinical Study. P. R. A. May and F. G. Ebaugh.—p. 200.
On "Therapeutic" Success in Alcoholism. G. Lolli.—p. 238.

Blood Alcohol Concentrations in Relation to Time of Wine Drinking.—Experiments were conducted on medical students in good health and ranging in age between 23 and 26 years. The wine had an ethyl alcohol content of 11% by volume. The amount given in each experiment corresponded to 0.5 cc. of ethyl alcohol per kilogram of body weight. The meal given provided 1,898 calories. When wine was given with or after meals, lower blood alcohol concentrations were observed than when it was given on an empty stomach. The effect of a meal on blood alcohol concentrations lasted about four hours. When wine was taken on an empty stomach in three or in six doses, the peak of the blood alcohol curve appeared later than when it was given in a single dose. When wine was given in three or in six doses during a meal, the resulting blood alcohol curves were definitely lower than those that follow similar ingestion of wine on an empty stomach. The peak of the curve following the drinking of wine on a full stomach appeared earlier than when taken on an empty stomach. This earlier appearance of the maximum blood alcohol concentration seems to indicate that retarded absorption cannot explain the lowering of the blood alcohol curve induced by a meal ingested before the administration of the alcoholic beverage. These observations uphold the view that alcoholic beverages should be ingested with or soon after meals if it is desired to utilize their qualities and minimize the risks of possible untoward effects.

Surgery, St. Louis

34:1-168 (July) 1953

Studies on Blood Ammonia in Normal and Shock States. R. M. Nelson and D. Seligson.—p. 1.
Intraductal Secretory Pressure of Pancreas in Unanesthetized Dogs. J. H. Wulsin and V. E. Siler.—p. 9.
Temporary Occlusion of Inferior Vena Cava Suggested as Means of Treatment in Thromboembolism Requiring Cava Ligation. M. A. Streuter and J. R. Paine.—p. 20.
Hyaluronidase as an Aid in Surgical Dissection. M. A. Streuter.—p. 28.
Experimental Evaluation of Effectiveness of Tween 80 in Reducing Fecal Nitrogen and Fat Loss Following Subtotal and Total Gastrectomy. T. C. Everson.—p. 33.
*Adenolipomatosis of Thyroid: New Type of Goiter. V. E. Chesky, W. C. Dreese and C. A. Hellwig.—p. 38.
Jejunal Polyps and Intussception Associated with Abnormal Melanin Pigmentation. W. G. Young Jr.—p. 46.
Tibial Fracture Causing Ischemia of Anterior Crural Muscle Group. J. M. Linder and J. Harley.—p. 51.
*Papilloma of Gall Bladder with in Situ Carcinoma. E. J. Tabah and G. McNeer.—p. 57.
An Anorectoplasty for Extensive and Complicated Hemorrhoids. E. Granet.—p. 72.
Plastic Armor for Experimental Animals. J. K. Narat, J. P. Cangelosi and J. V. Belmonte.—p. 88.

Adenolipomatosis of Thyroid: New Type of Goiter.—The patient, a 15-year-old youth, had had a lump in the neck since birth. The lump increased gradually. At the age of 9, the boy was given tablets for a goiter. He has three sisters and five brothers; one of the brothers had a fatty tumor removed from the side of his neck while in military service. Physical examination of the boy revealed normal conditions, except for the large tumor, which gave the impression of a cystic adenoma. On operation the neck tumor was found to be yellow in color and much softer than thyroid tissue. A rather large portion of thyroid was left on the right side to prevent myxedema. Microscopic examination of the surgical specimen, which weighed 253 gm., revealed that the tissue of the right lobe was not arranged in lobules; follicles of various sizes were separated by dense fibrous stroma. Large islands of mature fat tissue alternated with thyroid tissue. Amyloid could not be demonstrated by special stains. The histological diagnosis was congenital lipoadenomatosis of the thyroid. The glandular and adipose tissue were intermingled at a ratio of one to four. There was evidence of chronic thyroiditis. It is believed that the goiter was caused by admixture of fat tissue in thyroid tissue during the first months of embryonal life. The authors call attention to a report by Simard, which appeared in a French Canadian publication in 1945. It described a new type of goiter, which he called sclerolympholipomatosis of the thyroid. The authors feel that the clinical and structural aspects of their case greatly resemble those of Simard's case. The admixture of fat was not associated with amyloid of the thyroid as in the cases of Oberlin and Fuller.

Papilloma of the Gallbladder with In Situ Carcinoma.—True papilloma of the gallbladder is rare. Tabah and McNeer estimate its incidence at about 1 in 100 cholecystectomies. It is sometimes confused with cholesterol polyps or with the epithelial proliferations seen in chronic cholecystitis. The diagnosis of true papilloma of the gallbladder requires cholecystography. The authors describe observations on four patients with papilloma of the gallbladder, who were recently observed at the Memorial Cancer Center in New York City. These cases are especially noteworthy, because noninfiltrating carcinoma in situ originated in the papilloma in three of the patients. In the opinion of most writers there is no known relationship between the two lesions. The authors feel that cholecystectomy is the only effective treatment of papilloma of the gallbladder, because this condition is capable of giving rise to symptoms, because it is frequently associated with cholelithiasis and cholecystitis, and most important, because it is a precancerous lesion, in which malignant degeneration is quite likely.

Surgery, Gynecology and Obstetrics, Chicago

96:1-128 (July) 1953

Deformities of Urinary Tract with Congenital Absence of Vagina. J. T. Phelan, V. S. Counseller and L. F. Greene.—p. 1.
Survey Roentgenograms as an Aid in Diagnosis of Acute Abdominal Conditions. W. W. Sands.—p. 4.
Compilation Autografts of Subclavian Artery for Bridging Short Defects in Thoracic Aorta: Experimental Study with Pertinent Human Measurements. E. J. Schmitz, K. A. Merendino, L. B. Kiriluk and others.—p. 11.
Intragastric Temperature: Its Variations in Gastric Ulcers. H. B. Benjamin, M. Wagner and W. Zeit.—p. 19.
*Blood Volume Studies in Normal Humans. L. W. Brady, D. Y. Cooper, M. Colodzin and others.—p. 25.
Bedside Manometric Test to Localize Balloon of Miller-Abbott Tube in Intestinal Obstruction. L. C. Bartlett.—p. 33.
*Polyvinylpyrrolidone in Severe Burn Shock. J. W. V. Cordice Jr., J. E. Suess and J. Scudder.—p. 39.
Histogenesis of Squamous Cell Metaplasia of Cervix and Endometrium. C. F. Fluhmann.—p. 45.
Further Investigations on Use of Heparin in Treatment of Experimental Frostbite. R. B. Lewis and P. W. Moen.—p. 59.
Intramedullary Nailing of Fractures of Shaft of Long Bones. M. F. Hauge.—p. 67.
Experimental and Clinical Evaluation of Surgical Suture Materials. E. T. Madsen.—p. 73.
Experimental Vascular Grafts: III. Dimensional Changes in Short and Long Length Fresh and Preserved Aortic Homografts Implanted into Thoracic Aorta of Growing Pigs: Preliminary Report. L. M. Nyhus, E. A. Kanar, H. G. Moore Jr. and others.—p. 81.
Anatomic Basis for Ischemia Localized to Certain Muscles of Lower Limb. E. A. Edwards.—p. 87.
*Coin Lesions of Lung. C. F. Storey, R. A. Grant and B. F. Rothmann.—p. 95.
Cancer of Rectum: Results of Treatment of All Cases Admitted to Pondville Hospital June 1927 Through December 1946. E. M. Daland and L. G. Mitchell.—p. 105.

Blood Volume Studies in Normal Humans.—The study was divided into three parts. In part 1 it was demonstrated by using iodinated human serum albumin that the three-sample withdrawal method gives the more consistent results. Making use of the disappearance curve accounts for the loss of the material from the blood stream, the loss due to diffusion of the material into the lymph, and the variations in the initial mixing rate. In part 2 the values for the plasma volume obtained by utilizing Evans' blue or iodinated human serum albumin show a good degree of reproducibility in the same

patient in spite of a number of technical difficulties. In part 3 the plasma and total blood volumes obtained by using radioactive phosphorus tagged red blood cells, iodinated human serum albumin, and Evans' blue were compared simultaneously in the same patient. The first test gives the lowest values, the second the middle values, and the third the highest. By using the above data it was demonstrated that the total body hematocrit is lower than the peripheral vessel hematocrit. On the basis of theoretical considerations the authors believe it is better to determine the total blood volume by adding the red cell mass determined by radiophosphorus tagged red blood cells and the plasma volume obtained with iodinated human serum albumin. Both are direct measurements and do not introduce the error of the peripheral vessel hematocrit.

Polyvinylpyrrolidone in Burn Shock.—The hydrophilic character and osmotic activity of polyvinylpyrrolidone are factors that increase and maintain circulating blood volume. The ability of the polyvinylpyrrolidone molecule to bind or adsorb toxins and the fact that it is inexpensive, completely sterilizable, producible in unlimited quantities, nonantigenic, and well tolerated assure polyvinylpyrrolidone an important role in burn therapy. Cordice and associates review their experience with polyvinylpyrrolidone in Ringer's solution in the treatment of eight severely burned patients. The areas involved by the burns varied from 20 to 75% of the body surface. From 1,000 to 3,000 cc. of polyvinylpyrrolidone in Ringer's solution was infused in from one to eight and one-half hours. All patients treated with the polyvinylpyrrolidone solution on admission showed recovery from shock, decrease in hematocrit, improvement of toxicity, and increases in urinary output. In three cases the hemoglobinuria cleared in periods of 12, 15, and 48 hours respectively, but the improvement and the fall in hematocrit were not maintained as well as in hemorrhagic and traumatic shock. This may be explained by the continued fluid and protein loss from the burned areas. Early improvement with fall in hematocrit was always observed, and in none of the four patients who died was death caused by shock or hemoconcentration. Three of the fatal cases showed laboratory evidence of impairment of liver function. There was no evidence of toxic action of polyvinylpyrrolidone; a reaction following infusion of the drug in one patient seemed more likely to be due to the increase in blood volume with toxins from burned areas being drawn into the blood stream. A sharp decrease in plasma protein occurred in two patients; this should be guarded against with adequate diet, intravenous plasma, albumin, and blood transfusions with early skin grafting. The results substantiate previously published experiences and indicate that polyvinylpyrrolidone is a valuable adjunct in the early treatment of burns.

Coin Lesions of Lung.—Storey and associates list the following as the characteristics of coin lesions of the lung: 1 to 5 cm. in size, round or oval in shape with sharply circumscribed borders, surrounded on all sides by normal appearing lung, producing no symptoms, homogeneous in density or containing calcium, and solitary. They present observations on 40 patients with this lesion. The nodule in each case was discovered upon routine x-ray examination of the chest. In all except two of the cases surgical excision was resorted to. Tuberculoma was the usual preoperative diagnosis. A malignant tumor was encountered in seven instances. There was no surgical mortality, and the postoperative morbidity was minimal. A spread did not occur in any of the patients whose lesion proved to be of tuberculous origin. Five cases are presented to illustrate the hazards of the watchful waiting program sometimes advocated in cases of this type. Spontaneous resolution of these nodules cannot be anticipated. If of tuberculous origin, as they often are, they will not respond to medical treatment. These lesions are not influenced by streptomycin, because the drug does not penetrate the fibrous wall of tuberculomas. Although it cannot be stated with statistical accuracy just how frequently these lesions cavitate and spread, it is well known that such a disaster occurs occasionally. Of much greater importance is the fact that until histological study of the excised mass has been carried out, the diagnosis can only be presumptive. Experience has shown that it is unsafe to manage these patients on the assumption that a coin lesion is probably benign. In a collected series of 362 patients with histologically verified coin lesions, including those reported in this paper, neoplastic disease was found in 108 cases. The authors feel that a cancer rate of nearly 30% makes it difficult to defend any therapeutic regimen that does not provide for their prompt removal.

Virginia Medical Monthly, Richmond

80:355-416 (July) 1953

The Physician as Citizen. W. B. Blanton.—p. 358.
Recognition of Pre-Eclampsia and Pre-Hospital Therapy of Pre-Eclampsia. J. R. Kight.—p. 360.
Adenocarcinoma of Urinary Bladder. G. W. Link and R. C. Bunts. —p. 362.
Cesarean Section: Present Day Trends with Report of Cases. E. S. Groseclose.—p. 368.
Some Roentgenological Aspects of Peptic Ulcer. J. Mc. L. Adams. —p. 379.
Etiology and Treatment of Peptic Ulcer: Review. H. P. Maccubbin. —p. 384.
Resume of Surgical Treatment of Peptic Ulcer. E. Horgan.—p. 389.
Microcolony Technique for Rapid Determination of Bacterial Sensitivity to Antibiotics. H. J. Welshimer, M. M. Jones and C. D. Gibson. —p. 392.
Neonatal Asphyxia Due to Bilateral Choanal Atresia. T. S. Chalkley. —p. 398.

West Virginia Medical Journal, Charleston

49:181-218 (July) 1953

Gastric Resection for Perforated Peptic Ulcer. J. C. Condry.—p. 181.
Dexedrine Poisoning in Infant. R. T. Rapp.—p. 184.
Fat Embolism Associated with Multiple Fractures. J. E. Summers. —p. 185.
Regional Enteritis: Report of Case. W. D. McClung.—p. 187.
Drug Addiction in Upper Economic Levels: Study of 142 Cases. E. J. Morhous.—p. 189.

Yale Journal of Biology and Medicine, New Haven

25:447-556 (June) 1953. **Partial Index**

Development of Rooming-In at Yale. E. B. Jackson.—p. 484.
Social History of the Caul. T. R. Forbes.—p. 495.
Study of 300 Consecutive Cases of Abdominal Wound Closure with Alloy Stainless Wire Sutures. J. M. Freiheit and P. R. de Villers. —p. 509.
Cephalic Version in Breech Presentation. I. Friedman.—p. 517.
*Unrecognized Intrauterine Anoxia as Cause of Fetal Death During Labor. H. C. Taylor.—p. 525.
Theory and Practice of Natural Childbirth. F. W. Goodrich Jr.—p. 529.

Intrauterine Anoxia as Cause of Fetal Death During Labor.—Although toxemia, prolonged labor, traumatic delivery, maternal anemia, excessive analgesia and anesthesia, and placental accidents have long been recognized as causes of intrauterine anoxia and fetal death, relatively little attention has been directed toward labor itself. Taylor believes the production of anoxia by over-forceful labor may well account for some of the so-called "unexplained fetal deaths in utero." He cites the obstetrical histories of three women, which suggest that when there are exceedingly strong, hard, and frequent labor contractions, intrauterine anoxia may occur, leading to "unexplained deaths." Precipitate, or strong and forceful, rapid, driving labor added to the known deficiencies inherent in placental physiology can bring about fetal death in utero. This may happen repeatedly in the same patient. All three women had a forceful type of driving labor typified by strong pains lasting at least a minute and recurring at about two-minute intervals. One of the women was conscious of strong Braxton Hicks contractions, which may have been of significance. In all three instances the appearance of meconium-stained amniotic fluid served as an indication of intrauterine fetal anoxia. Unfortunately, once fetal distress has been noted, the damage may already have occurred, although subsequent treatment may enhance the possibility of recovery. Elective cesarean section seems to be the method of choice in preventing a second fetal death.

FOREIGN

Acta Chirurgica Scandinavica, Stockholm

105:1-318 (Nos. 1-4) 1953. **Partial Index**

Peritonitis Due to Appendicitis and Its Treatment. G. Bohmansson. —p. 11.
Gastroenterostomy with Resection of Vagus Nerves in Treatment of Adherent Duodenal Ulcers. N. Blixenkrone-Møller.—p. 33.
Tendon Transposition in Paralysis of Opposition of Thumb. H. H. Bohr. —p. 45.
Treatment of Fractures of Upper End of Radius. T. Castberg and E. Thing.—p. 62.
Pharyngeal Flap Operation in Velopharyngeal Insufficiency. P. Fogh-Andersen.—p. 92.
*Segmental Cystectomy in Treatment of Vesical Carcinoma: Analysis of 16 Cases. A. Gammelgaard and P. Morville.—p. 96.
Further Observations Regarding Prognosis and Diagnosis in Hyperparathyroidism. J. Hellström.—p. 122.
Histological Changes of Renal Medulla in Hydronephrosis. E. F. Hjort. —p. 132.
Some Problems in Operative Treatment of Hyperinsulinism. J. Holst. —p. 138.
*Valvulotomy for Mitral Stenosis. E. Husfeldt, H. C. Engell and A. Pedersen.—p. 144.

Segmental Cystectomy in Vesical Carcinoma.—The authors report on 16 patients on whom segmental cystectomy was practiced for vesical carcinoma in a Copenhagen hospital between the years 1944 and 1951. The total number of patients with cancer of the bladder admitted in this period was 46, of whom 16 were inoperable and 14 were treated with cystotomy plus electrocoagulation or with total cystectomy. Three women and 13 men are reported on here. More than half of them were over 60 years. In nine cases the resection necessitated transplantation of one ureter to some other part of the bladder. There was no postoperative death, and complications were limited to one case of protracted suprapubic fistula with pubic osteitis. In four cases the tumor was localized to the apex, in eight to the right side of the bladder, and in four to the left. In 10 of the cases the tumor was macroscopically papillomatous, and in 6 it was nodular and ulcerative. In 50% of the cases the duration of illness was from six months to two years; two patients had previously (six months and two years before) been treated for benign papilloma. On reexamination, from six months to eight years after the operation, eight patients were free from recurrence, six had a relapse, and in two this aspect was uncertain. The observation period for three of those who did not relapse was 6 to 12 months, and for four it was over 3 years. The papillomatous tumors of relatively low malignancy and slight penetration into the bladder wall are nonrelapsing. Also the localization of the lesion plays a role, as all the cases in which the tumor was localized to the apex of the bladder have been free from relapse regardless of the degree of malignancy and depth of penetration. Segmental cystectomy, which is merely a local radical treatment, has advantages over total cystectomy. The efficacy of segmental cystectomy can be increased by earlier diagnosis and surgical treatment.

Valvulotomy for Mitral Stenosis.—Sixty patients were operated on for mitral stenosis in a Copenhagen hospital between January, 1950, and July, 1952. Their ages ranged from 14 to 54 years. Nine patients died, but of 45 patients less than 40 years of age only 2 died. Of the 14 patients who had symptoms of cardiac incompetence at rest at the time of operation, 4 died. Owing to the questionable reliability of the diagnostic criteria, the authors also operated on patients who were supposed to have some mitral incompetence. It proved possible to diagnose the majority of the cases of mitral insufficiency by stethoscopic examination. The accuracy of the diagnosis is improved by examination of the pulmonary capillary pressure curves. As a rule, the valvulotomy has been performed with the finger alone, an instrument having been used in only four cases, but in the future an instrument will be used in all cases in which the valve is found to be leathery and elastic. The authors preferred to use the finger unprotected by a glove, because one gets a better impression of the anatomical details and of the amount of regurgitation. Thirty-six patients were reexamined 4 to 22 months after the operation. Of these, 24 were improved to an extent that they could be placed into a "better" group, according to the classification of the American Heart Association. Those who did not improve were mainly those with severe mitral insufficiency and with leathery, elastic valves. Repeated attacks of pulmonary edema and hemoptysis are indications for the operation. A history of peripheral emboli, and combined stenosis and regurgitation and rightsided heart failure are only relative contraindications in patients below 40 years of age; in patients above 40 years the indications must be stricter. Contraindications are: active rheumatic infection, complicating aortic failure and pronounced incompetence indicated by stethoscopic observations and by the pulmonary capillary pressure curves.

British Journal of Dermatology, London

65:195-234 (June) 1953

Treatment of Lupus Erythematosus with Mepacrine and Para-Aminobenzoic Acid. H. Black.—p. 195.
Systemic Lupus Erythematosus with Nodular Lesions: Report of Case. A. N. P. Milner.—p. 204.
Unusual Alopecia Capitis in Acute Lupus Erythematosus, Sclerodermia, and Dermatomyositis. C. D. Evans.—p. 212.

British Journal of Radiology, London

26:273-328 (June) 1953

Irradiation Sarcoma. A. Jones.—p. 273.
Chronic Myeloid Leukaemia. I. Some Observations on Chronic Myeloid Leukaemia. D. A. G. Galton.—p. 285.
*Id.: II. Comparative Analysis of Incidence and of Results of Treatment of 56 Cases. E. M. Ledlie.—p. 290.
Alpha-Ray Dosage in Bone Containing Radium. F. W. Spiers.—p. 296.
Effect of Environmental Factors on Radio-Sensitivity of Lymph Nodes Cultured in Vitro. O. A. Trowell.—p. 302.
Reflux Oesophagitis and Its Radiological Differential Diagnosis. J. Dawson.—p. 310.
Bronchography Using Dionosil Oily. W. S. Holden and R. S. Crone. —p. 317.
Sign of Intussusception. H. Jackson.—p. 323.
Effect of Chemical Agents on Nucleic Acid and Protein Synthesis in Rat Tumour Tissue in Vivo. B. E. Holmes and L. K. Mee.—p. 326.

Incidence and Treatment of Myeloid Leukemia.—The occurrence of chronic myeloid leukemia is reported in 24 male and 32 female patients who were admitted to the Royal Cancer Hospital in London between 1936 and 1951. The average age of onset of the disease for the 56 patients was just over 44 years. Comparison with groups of cases of chronic myeloid leukemia reported by other workers suggested a shift towards a higher age of onset of the disease and a change in the ratio of men to women towards a higher proportion of females than males. Statistical figures showed a consistent rise in the incidence of myeloid leukemia, probably not entirely due to improvements in diagnosis and recording. The duration of the disease, whatever treatment was employed, has remained remarkably constant over the last 30 years and is between 3 and 4 years. X-ray irradiation alone or in combination with chemotherapy has been used in most of the cases. The irradiation technique usually adopted consisted of irradiation of the spleen only; the average dose given was between 50 and 150 r twice a week, up to an average total of between 500 and 1,500 r in four to eight weeks, though in some patients a good remission was obtained with a smaller dose. Comparison of the methods of treatment used showed that better results have been obtained with external roentgen irradiation than with other methods so far employed. Radioactive phosphorus has been used in too few cases for any conclusions to be drawn. Of the various chemotherapeutic agents all except 1,4-dimethanesulphonyloxybutane (Myleran) have been discarded by the author on account of the relatively poor remissions achieved and the high incidence of toxic effects. The preliminary trials of Myleran in doses of 4 mg. daily by mouth have been encouraging. It remains to be seen whether the bone marrow will show repeated favorable responses to this agent. There is no evidence as yet that any of the methods of treatment can be regarded as a cure, but it is probable that some prolongation of life is obtained in a few patients and certain that in many more treatment can so after the quality of life as to turn it from one of invalidism into one enjoyable and worth while.

British Medical Journal, London

1:1291-1344 (June 13) 1953

*Parenteral Hexamethonium in Hypertension. B. Morrison.—p. 1291.
Effects of Hexamethonium on Normal Individuals in Relation to Its Concentration in Plasma. B. Morrison and W. D. M. Paton.—p. 1299.
*Farmer's Lung. T. C. Studdert.—p. 1305.
Intractable Gastric Crises Relieved by Chordotomy. G. O. Mayne.—p. 1309.
*Toxic Effects of Phenylbutazone. J. R. Nassim and T. Pilkington.—p. 1310.
Toxic Effects of Phenylbutazone, with Special Reference to Disorders of Blood. J. C. Leonard.—p. 1311.
Ethopropazine Hydrochloride in Treatment of Cerebral Palsy. R. G. Mitchell.—p. 1313.
Adrenaline Necrosis. G. Leslie and D. McPhee.—p. 1315.

Parenteral Administration of Hexamethonium in Hypertension.—Hexamethonium, pentamethonium, or a homologue of hexamethonium have now been in use for over three years in the treatment of hypertension. Most investigators have used the oral route, and there is much difference of opinion concerning the benefit obtained. Morrison reports observations on 39 hypertensive patients who were treated with hexamethonium bromide by subcutaneous injection. The patients were drawn from the complicated-essential, malignant, or renal groups of hypertension; uncomplicated cases were not included. Five patients died during the treatment and it was discontinued for various reasons in 6 others, but 28 patients received regular therapy for periods varying between 3 and 15 months and were seen at least once a month. After the development of a variable amount of tolerance to the drug during the first four to eight weeks, all patients could be stabilized on a dose which gave an average blood pressure level much below that found in the control period. Reduction in the mean systolic pressure ranged from 20 to 90 mm. Hg and in the mean diastolic pressure from 8 to 40 mm. Hg. Hypertensive headaches were relieved in 15 out of 19 cases, and lessened in frequency and severity in the other four. Giddiness disappeared and encephalopathic attacks did not recur, except in one instance. Shortness of breath from cardiac causes was generally improved and in several cases there was relief from acute cardiac dyspnea. Diminution in cardiac volume was demonstrated in five of seven cases, and in seven out of 16 cases electrocardiographic signs of left ventricular hypertrophy were altered towards the normal. Retinopathy was strikingly improved in all severe cases, papilledema subsiding, and extensive exudates and hemorrhages becoming reabsorbed, with restoration of normal vision after about six months' treatment. One instance of coronary thrombosis and two major and two minor cerebral vascular accidents occurred during treatment, but in two of the latter the blood pressure was high at the time. No evidence of increased damage was found among patients with impaired renal function. Three patients, after successful treatment of from seven to 15 months, were found to have dyspnea and symmetrical opacities in the lung fields. The pathogenesis of these pulmonary changes is still obscure. Although these three patients required large doses of the drug, others who required as much or more have remained well. The author feels that the risk of these complications should not be regarded as a contraindication to the use of hexamethonium in severely ill hypertensive patients.

Farmer's Lung.—The condition designated as "farmer's lung" appears to be commonest in regions with high rainfall in the hay-gathering season and primitive methods of harvesting and storage in closed barns. Much information was obtained from several practitioners of the area where farmer's lung is observed. The cases reviewed consist of six confirmed radiologically, and six probable cases that were radiologically inconclusive. The clinical picture is characterized by a nonspecific lung irritation which may follow exposure to mouldy vegetable dusts of any type, but mainly contact with poor quality hay. Although before the severe reaction there may be minor bronchitic episodes following short contact, a distinction must be drawn between true farmer's lung and an asthmatic attack following exposure to mouldy dust. The main feature of the disease is breathlessness and cyanosis which develop within 12 hours of exposure. The onset is sudden, and may be associated with a rigor, vomiting, a dry cough, and a feeling of suffocation. The picture resembles that of acute edema of the lungs, but there is no cardiac embarrassment. Widespread fine crepitations are heard, but no localized areas of consolidation are detected. Clearing of radiological and physical signs usually requires six to eight weeks. After the first two or three weeks the breathlessness becomes less distressing, but then loss of weight and night sweats occur. After three months the patient appears to be well, but there is a tendency for the condition to recur on re-exposure. Treatment has little effect and spontaneous clearing is observed in untreated cases. Farmer's lung is similar to coniosporiosis, byssinosis, and diffuse granulomatous pneumonitis. The author is of the opinion that the condition is a nonspecific interstitial lung reaction to some material in the fungus-laden dust, rather than a true fungous infection.

Toxic Effects of Phenylbutazone.—The drug can be given by mouth or by intramuscular injection, but as the majority of patients treated by the authors were outpatients, the former route was usually employed. Patients were warned of possible side-effects and were asked to restrict their salt intake; those who gave a history of peptic ulcer or cardiovascular or renal disease were excluded. Three patients were suffering from diabetes, which was not affected by phenylbutazone. The series consisted of 109 patients (79 women and 30 men), their ages ranging from 12 to 73 years. Of these, 86 had rheumatoid arthritis, 19 osteoarthritis, and 3 gout. One patient had a ligamentous strain of the knee. The drug was given to 102 patients by mouth in tablets containing 0.2 gm. in daily doses ranging from 0.2 to 1.2 gm. (average dose 0.6 gm.). Seven received intramuscular injections of 1 gm. on four alternate days, followed by weekly injections. All patients were seen first at weekly, then fortnightly, and, later, monthly intervals. A check was kept on the white blood cell count and the sedimentation rate. Symptomatically 59 patients were greatly improved by phenylbutazone, but in none was there a fall in the sedimentation rate. In 15 improvement was only slight, in 25 the drug had no beneficial effect, and in 10 toxic reactions occurred before any therapeutic effect could be noted. Forty-six patients had toxic reactions. These occurred in nearly half of those deriving great benefit. The authors feel that although toxic reactions severe enough to make further therapy dangerous were observed in nearly half the patients, its trial in chronic disabling conditions seems justifiable, since there are a large number of patients who derive benefit from it without toxic manifestations.

Fortschr. Röntgenstrahlen & Röntgenpraxis, Stuttgart

78:531-646 (May) 1953. **Partial Index**

Diagnostic Importance of Functional Dilatation of Esophagus in Roentgen Picture. L. Fischer.—p. 573.
Roentgenologic Examination for Differentiation of Simple Hypospadias from Hypospadias in Hermaphroditism. E. Schumann.—p. 576.
Rare Disorders of the Maxillary Sinus. L. Psenner.—p. 582.
*Simultaneous Occurrence of Fibrous Dysplasia (Jaffé-Lichtenstein) and Extra-Osseous Fibromyxoma. K. Braunwarth.—p. 589.
Selective Arteriography. D. Schoen.—p. 600.
Roentgenologic Aspects of Tear of Achilles Tendon. D. Schoen.—p. 604.
Roentgenologic Aspects and Course of Perforation of Gallstones. K. Brantner.—p. 613.
Extensive Hemangiomatosis with Bone Involvement. W. Haag.—p. 616.
Calcification of Spermatic Duct. H. Wieland.—p. 618.

Simultaneous Occurrence of Fibrous Dysplasia (Jaffé-Lichtenstein) and Extraosseous Fibromyxoma.—Braunwarth points out that in 1938 Jaffé and Lichtenstein described fibrous dysplasia as a separate entity, rejecting a relationship to osteitis fibrosa generalisata, despite the fact that the histological aspects of both diseases are similar. The concept of Jaffé and Lichtenstein has been widely accepted, but Albright and collaborators observed cases in which in addition to bone changes cutaneous lesions existed, and in some cases incretory disturbances in the form of pubertas praecox were observed. Uehlinger in 1940 described necropsy studies on a patient with polyostotic fibrous dysplasia. This patient also had fibromyxomas in the thigh and leg. The case presented in this paper concerned a woman, aged 56, who asked medical advice about a swelling on the left thigh that had developed in the course of the last year. This case resembles the one described by Uehlinger in that

fibrous dysplasia existed in the femur and in the adjoining soft parts a myxofibroma. The author cites two other cases from the literature, in which osteitis fibrosa was probably brought on by fibrous dysplasia, and in these cases likewise myxofibromas were found in the surrounding musculature. Myxofibromas are found also in von Recklinghausen's neurofibromatosis, which seems to be related to fibrous dysplasia. Nevi of a "coffee with milk" color as well as incretory disorders such as pubertas praecox have frequently been found in association with fibrous dysplasia, and since such lesions are found also in neurofibromatosis, it is assumed that these entities are related.

Glasgow Medical Journal

34:195-220 (May) 1953

Long Term Results of Cholecystostomy. J. Hutchison and A. L. Morton.—p. 195.

Improved Stripper for Treatment of Varicose Veins. G. C. Swanson and W. Reid.—p. 201.

*Prevention of Peritoneal Adhesions by Cortisone. A. Lyall.—p. 208.

Fatal Case of Potassium Permanganate Poisoning. G. M. Ritchie.—p. 213.

Prevention of Peritoneal Adhesions by Cortisone.—Lyall investigated the preventive effect of cortisone on the formation of peritoneal adhesions in guinea pigs. Various substances were investigated for their effect in producing strong peritoneal adhesions in experimental animals, and it was found that a 50% suspension of talc in isotonic sodium chloride solution with the addition of mandarin black produced firm adhesions. Daily intramuscular injections of cortisone acetate for 7 days before and for 16 days after the injection of the talc suspension prevented or greatly restricted the formation of peritoneal adhesions, whereas the control animals, which received the talc suspension but no cortisone, all developed peritoneal adhesions. These experiments confirm in guinea pigs what was described in rats by others, namely, that adhesion formation can be prevented by the parenteral use of cortisone. It is not certain whether this can profitably be applied to the human subject, because of the possibly harmful effect of the cortisone on the healing of the abdominal wound. There is still some doubt about the exact method by which cortisone prevents adhesion formation. The obvious explanation would be its power of retarding fibroplasia. But there is evidence of other possible factors. The amount of clear peritoneal exudate is increased and that may contain some "spreading factor." Increased intestinal motility might also play a part.

Journal of Irish Medical Association, Dublin

32:165-198 (June) 1953

*Management of Infantile Hypertrophic Pyloric Stenosis. B. M. McNicholl.—p. 165.

Epi-Sacro-Iliac Lipoma and Sciatica. V. Sheehan.—p. 173.

Cortisone in Treatment of Carditis. J. Mowbray.—p. 178.

Rheumatic Carditis—Its Diagnosis and Prevention. R. Mulcahy.—p. 185.

Hypertrophic Pyloric Stenosis in Children.—McNicholl reports on 143 infants with a pyloric tumor palpated by an experienced pediatrician on more than one occasion. There were 117 males and 26 females, corresponding to the usual sex incidence of 4 or 5 to 1. Medical treatment was attempted in 88, and was successful in 57. Surgical treatment was used alone in 55 cases, and in 31 others it followed varying periods of medical treatment. Selection of one type or other of treatment was made according to various pediatricians' personal views, and not according to the criteria advised by the author. Surgical treatment is indicated in infants in whom vomiting commences during the second week or earlier, the weight is below that at birth, severe obstruction appears suddenly and there is severe dehydration. Suitable correction of the dehydration must, of course, precede the operation. Severe infection or generalized disease and slight obstruction or late onset are contraindications to surgical treatment. Indications for medical treatment are vomiting that commences in the fourth week or later, and which has persisted for three weeks or more when the child is first seen and the weight loss is nevertheless small; also moderate or severe alkalosis (after suitable correction). Contraindications to medical treatment are severe obstruction and dehydration, and perhaps hematemesis. The feeding procedure during medical treatment is outlined. Treatment with atropine methyl nitrate (Eumydrin) is described. Surgical treatment is discussed only from the pediatrician's point of view, with emphasis on the preoperative and postoperative management. Three infants died, two from complicating infections some weeks after successful surgical treatment. The author feels that approximately half of all infants with pyloric stenosis can be satisfactorily treated by medical means, with special emphasis on atropine methyl nitrate.

Medical Journal of Australia, Sydney

1:649-684 (May 9) 1953

Genes and Mermaids: Changing Theories of Causation of Congenital Abnormalities. M. F. Hickey.—p. 649.

Coarctation of Aorta with Multiple Congenital Abnormalities. H. M. Windsor.—p. 668.

Advanced Chronic Endocarditis with Mitral Stenosis and Aortic Stenosis in Child of Three Years. B. Sharkey and V. J. McGovern.—p. 668.

Traumatic Gap in Urethra. V H. Wallace.—p. 669.

Quarterly Journal of Medicine, Oxford

22:121-260 (April) 1953

Factor of Infection in Chronic Bronchitis. C. H. Stuart-Harris, M. Pownall, C. M. Scothorne and Z. Franks.—p. 121.

Innate Functionals Defects of Renal Tubules, with Particular Reference to Fanconi Syndrome: Cases with Retinitis Pigmentosa. W. P. U. Jackson and G. C. Linder.—p. 133.

Inclusion Encephalitis and Its Relation to Subacute Sclerosing Leucoencephalitis: Report of Five Cases. J. Foley and D. Williams.—p. 157.

Hyperpiesis in Cardiovascular Beri-Beri. J. H. Walters.—p. 195.

*Radiation Nephritis. R. W. Luxton.—p. 215.

Papilloedema and Fits in Hypoparathyroidism, with Report of Three Cases. D. K. Grant.—p. 243.

Radiation Nephritis.—Nephritis may result when all the renal tissue is included within the therapeutic field of deep x-rays. Twenty-seven patients with radiation nephritis were studied clinically. The syndromes observed were acute and chronic radiation nephritis, benign hypertension, and late malignant hypertension. Thirteen cases of acute radiation nephritis were studied in detail. From the start of radiotherapy there was an asymptomatic latent period of 6 to 12 months (usually eight months). The main clinical features were edema, urinary changes, hypertension, anemia, cardiac enlargement, headache, retinitis, dyspnea, nausea and vomiting, lassitude, nocturia, and drenching sweats. Edema was found in the majority of patients. Generalized edema, shown by a rapid increase in weight, was an early symptom in some. Pleural effusions and ascites occurred in the fatal cases only. The urinary changes included persistent albuminuria, low specific gravity of urine, and the presence of urinary casts or a few erythrocytes. Hypertension usually developed early, but fell to normal if the patient survived for six months. Severe and refractory anemia was an early and constant feature. It was normochromic and normocytic, and not due to marrow aplasia or hemolysis, but rather to renal failure. Cardiac enlargement occurred at an early stage in all cases. Renal function improved gradually in the patients who survived. There was a relationship between the level of the blood urea and the progress of the anemia; as renal function improved the need for blood transfusion became less. A bad prognosis was indicated by severe edema, or by a blood urea level over 100 ml. Death was due to left ventricular failure, congestive heart failure, hypertensive encephalopathy, and uremia. All patients who survived had residual chronic nephritis, with the features of chronic glomerulonephritis. A condition resembling benign essential hypertension occurred in four cases. Malignant hypertension developed long after radiotherapy, in two cases 18 and 24 months after radiotherapy; both patients died within seven weeks of the onset of symptoms. Autopsy in four of the seven fatal cases showed a layer of fibrous tissue between the peritoneum and kidneys. The kidneys were usually of normal size, but the capsules were thickened. There was widespread fibrosis between atrophic tubules, damage to almost all the glomeruli, and fibrinoid necrotic lesions of arterioles.

BOOK REVIEWS

The Founders of Neurology: One Hundred and Thirty-Three Biographical Sketches Prepared for the Fourth International Neurological Congress in Paris. By eighty-four authors. Edited by Webb Haymaker, M.D., Chief, Neuropathology Section, Armed Forces Institute of Pathology, Washington, D. C. With bibliographical and editorial assistance of Karl A. Baer, bibliographer, Army Medical Library, Washington, D. C. Cloth. $10.50. Pp. 479, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1953.

This book is a compilation of biographies of the important figures in neurology of the past 100 years, excluding those who are still living. The biographies were written by various neurologists, most of whom have had some personal contact with the person they describe. The book does not attempt to give a connected history of the development of neurology but is restricted to short biographies of 133 physicians, mainly German, French, English, and American, with a photograph of each. These biographies are divided into groups according to the special field of interest as follows: neuroanatomists, neurophysiologists, neuropathologists, clinical neurologists, and neurosurgeons. The sketches are too brief to give anything but a glimpse of the life and personality of the subject, but on the whole they are well written; and the photographs are clearly reproduced.

Forewords were written by Dr. Henry A. Riley, vice-president of the Fourth International Neurological Congress, Col. J. H. McNinch, director, Army Medical Library, and Brig. Gen. Raymond O. Dart, director, Armed Forces Institute of Pathology. A short chapter that defines the academic terms used in the biographies gives the reader insight into the academic hierarchy of France, Germany, and England. There is a brief list of references at the end of each biography that gives a few of the more important publications of the persons and, in some cases, sources for a more complete biography. There is a full and adequate index, and the book should be of value to all physicians interested in the nervous system.

Thoracic Surgical Management. By J. R. Belcher, M.S., F.R.C.S., Consultant Surgeon at London Chest Hospital, London, and I. W. B. Grant, M.B., M.R.C.P., Assistant Physician, Edinburgh Northern Hospitals, Edinburgh. Foreword by Sir Clement Price Thomas, K.C.V.O., F.R.C.S., Surgeon to Westminster and Brompton Hospitals, London. Cloth. $3.50. Pp. 196, with 65 illustrations. [Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2]; Baillière, Tindall & Cox, 7-8 Henrietta St., Covent Garden, London, W.C.2, 1953.

This small book is full of useful information clearly and concisely expressed. It is intended principally for senior residents in thoracic surgery or those in general surgery who come in contact with thoracic problems only occasionally. The book is well printed, well illustrated by clear line drawings, and is thoroughly recommended, not only to the comparatively junior resident in surgery but to all who are interested in surgery of the chest. Throughout, the advice proffered is sound, sane, and common sense. It is a book that should be in the libraries of all hospitals in which thoracic surgery is done.

Vitamins and Hormones: Advances in Research and Applications. Volume X. Edited by Robert S. Harris, Professor of Biochemistry of Nutrition, Massachusetts Institute of Technology, Cambridge, G. F. Marrian, Professor of Medical Chemistry, University of Edinburgh, Edinburgh, and Kenneth V. Thimann, Professor of Plant Physiology, Harvard University, Cambridge. Cloth. $8. Pp. 421, with illustrations. Academic Press, Inc., 125 E. 23rd St., New York 10, 1952.

The contents of this volume of a valuable series suggest a reversal of the title to more properly represent the 80% of the textual material devoted to the endocrine system. The editors remark: "This is a reflection of the greater amount of research being conducted at present in the hormone than in the vitamin field." Nevertheless, the sections devoted to vitamins are interesting and commend themselves to the clinician. The review of dietary neuropathies, including beriberi, alcoholic peripheral neuritis, polyneuritis gravidarum, acrodynia, and Wernicke's encephalopathy, develops the point that the earliest signs of thiamine deficiency in some patients may be peripheral nerve damage, in others, disturbances of the cardiovascular system predominate, and, in a small minority, Wernicke's encephalopathy is the initial abnormality. Pediatricians will find the discussion of the problem of absorption and transportation of fat-soluble vitamins particularly interesting because of the low store of these vitamins in the newborn. In the sections on the hormones, experimental aspects of study predominate. Of particular importance are the sections dealing with the effects of steroid hormones on the enzymes involved in tissue oxidation and carbohydrate metabolism.

Manual of Comparative Anatomy. By Osmond P. Breland, Ph.D., Professor of Zoology, University of Texas, Austin. Second edition. Cloth. $4.50. Pp. 256. McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farrington St., London, E.C. 4, 1953.

The first edition of this manual was published 10 years ago. As the title indicates, the book is to be used by students of comparative anatomy. This edition has been carefully revised and rewritten to conform with modern ideas. In addition to the classic animals, dogfish, necterus, and cat, it includes sections on the lamprey, perch, turtle, and pigeon. The book is well written and free from inaccuracies. Boldface type for the names of structures is used extensively. The author should be complimented on his fine descriptive style. The instructions for dissection are clear and definite. Indeed, the only drawback of this book is the absence of illustrations. Perhaps there is some merit in this, but, in laboratories where facilities do not exist for the study of all the representative species, it is advisable for the student to have illustrations of the important aspects of the species not subjected to dissection. This book should be most helpful to students of comparative anatomy and will also serve as a reference for research workers.

On Burns. Compiled and edited by Nathan A. Womack, M.D. Participants: Dr. William Altemeier, et al. Publication number 165, American Lecture Series, monograph in Bannerstone division of American Lectures in Surgery. Edited by Michael E. De Bakey, M.D., Professor of Surgery, Baylor University College of Medicine, Houston, Texas, and R. Glen Spurling, M.D., Clinical Professor of Surgery, University of Louisville, Louisville, Ky. Plastic Surgery Division. Editor: James Barrett Brown, M.D., Professor of Clinical Surgery, School of Medicine, Washington University, St. Louis. Cloth. $5.50. Pp. 178, with 7 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

This book represents a virtually verbatim transcript of the symposium on burns held at Iowa City in May, 1951. This symposium, which was held in conjunction with a National Civil Defense effort, might be thought of as laying the background in medicine and surgery that should underlie any administrative or logistical steps taken in civil defense. The participants, in addition to the editor, Dr. Womack, are experts in their field of burn study and treatment. Their remarks and informal comments are of great interest, even though nothing particularly outstanding or new is disclosed in the discussions. The sections are planned as an over-all review or status report on the problem of burns. The presentation is quite effective. The reader of this book should be the civil defense worker who wants to know something about burns. The book is too advanced for the medical student, and it is too elementary for the postgraduate student of surgery who, as an assistant resident or a resident, examines and treats burns. It is unfortunate that the discussions were prepared and transcribed without any bibliography, because the inexperienced reader will now have to trace through other channels the writings that are so extensively referred to in the text.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specificially so stated.

QUERIES AND MINOR NOTES

TRANSFUSIONS IN INFANTS

TO THE EDITOR:—*A point has arisen in the question of typing infants and newborn infants for transfusions (routine transfusions as well as replacement transfusions [Rh]). Is it necessary to type, cross match, and determine the Rh factor of the blood given a newborn infant, or is it proper and safe to give Rh-negative, type O blood routinely and repeatedly without typing and cross matching? Why?*

William L. Rumsey, M.D., Elizabeth, N. J.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—Although it is correct that in the normal newborn infant the development of isoimmune bodies is usually not very pronounced, normal babies do not receive blood transfusions. When one is dealing with infants with disease processes it seems advisable to follow the same routine procedures for blood transfusions as are established for adults. Typing and cross matching of recipient and donor, regardless of the age, is recommended.

ANSWER.—It is not good practice to give group O, Rh-negative blood routinely to all newborn infants for transfusion purposes without typing and cross matching tests, even though this is a relatively safe procedure. The question of selecting donors for newborn babies is fully discussed in a book by A. S. Wiener (Blood Groups and Transfusion, ed. 3, Springfield, Charles C Thomas, Publisher, 1943, pp. 69-71). In emergencies, the washed red blood cells of the mother may always be used for newborn babies since the baby's blood never contains antibodies capable of reacting with the mother's red blood cells. There is even slight objection to this if the mother is Rh positive and the baby Rh negative, although newborn babies are relatively incapable of forming antibodies and being sensitized. The recommended procedure is to group newborn babies, test for the Rh factor, and see that the infant receives compatible blood. In cases of erythroblastosis, of course, Rh-negative blood is used even though the baby is Rh positive. In cases of erythroblastosis caused by A-B sensitization, group O blood is used even though the baby belongs to group A or group B. In the unusual cases caused by Hr, Hr-negative blood should be used even though the baby is Hr positive. There is no simple answer to the question, since every case must be individualized.

POLIOMYELITIS

TO THE EDITOR:—*Six weeks ago we had three cases of acute anterior poliomyelitis in two weeks at Bryan Air Force Base, Texas. During this period and for a month following we discontinued the use of spinal anesthesia, especially since one patient was a young woman who had been delivered with spinal saddle block anesthesia two weeks prior to the onset of her disease. We have had no cases at this base in the past month, but more cases are being reported in surrounding counties throughout Texas. We would like to know whether it is safe to resume use of spinal anesthesia or whether it should be discontinued altogether.*

William W. Wiltberger, M.D., Bryan, Texas

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—On present evidence no one could say with assurance whether the use of spinal anesthesia in the case described had any connection with the subsequent development of poliomyelitis. No similar case has been found in the literature, and it seems likely that the sequence of events was due to chance rather than cause and effect. Occasionally poliomyelitis has occurred shortly after parenteral injection of various agents. The only data available that are statistically significant relate to injections of agents commonly given to children. With some of these, at least, there is a demonstrated tendency for paralysis to occur selectively in the limb that was the site of the injection. It is not yet clear how this effect is influenced by such variables as the nature and volume of the inoculum, or the site and depth of needle puncture. Nor is it clear, from data on man, that injection of any of the agents studied increases the risk of poliomyelitis (Greenberg, Abramson: *New York State J. Med.* **52**:2624-2629 [Nov. 1] 1952). Some recent animal experiments of Bodian (*Fed. Proc.* **12**:437 [March] 1953) show that intramuscular injections of cortisone or of gelatin, if given during a state of viremia, increase the incidence of paralytic poliomyelitis, with selective paralysis of the injected limb. Bodian suggests that injured nerve fibers at the site of injection may provide an entry for circulating virus into nerve tissues and a route for invasion of the central nervous system. To what extent these findings would apply to a spinal puncture in man can only be conjectured at present. In human patients the probability of a viremia existing at the time of puncture would in any circumstances be small. It would presumably be less for adults than for children (because of acquired immunity) and would depend on the local prevalence of poliomyelitis infection at the time. H. K. Faber, at the meeting of the American Pediatric Society in Atlantic City, May 8, 1953, presented a theory that postinoculation paralysis results from introduction of virus from contaminated skin surfaces or needles at the site of puncture and that introduction of virus by this means can be avoided by prior sterilization of the skin with a 2% tincture of iodine solution.

ANSWER.—Almost certainly there is no connection between the spinal saddle block anesthesia given two weeks before the onset of acute anterior poliomyelitis and the disease. There have been instances where spinal anesthesia was given to patients with unrecognized prodromal symptoms of poliomyelitis in whom paralysis developed from one to five days later, but this was probably coincidental. Of course, one should avoid the use of spinal anesthesia when there are suspicious prodromal symptoms of poliomyelitis. Spinal anesthesia is contraindicated in a patient who has or has had poliomyelitis with residual paralysis, just as this form of anesthesia should be avoided in anyone who has a history of central nervous system disease. There is no reason why spinal anesthesia should not be used in the area in spite of the occurrence of acute poliomyelitis.

ASCORBIC ACID

TO THE EDITOR:—*I read an article in the April, 1952,* Archives of Pediatrics *by Dr. W. J. McCormick of Toronto, Canada, on the chemotherapeutic value of large doses of vitamin C. It was stated that the smoking of one cigarette neutralizes 25 mg. of ascorbic acid in the body, the amount contained in an average-sized orange. If this statement is correct, it would appear that many persons who smoke heavily may have vitamin C deficiency. Can ascorbic acid be bought without a prescription in drug stores in tablets containing up to 250 mg.? Dr. McCormick says the drug is harmless, even in doses as high as 1,000 mg. given intravenously. Is there any evidence that there are less upper respiratory tract infections in areas, such as Florida, in which more citrus fruits are eaten and hence the vitamin C intake is higher?*

M.D., Philadelphia.

ANSWER.—That the smoking of one cigarette neutralizes 25 mg. of ascorbic acid in the body is not generally accepted as a fact. Adequate data concerning the effect of smoking on the metabolism of vitamin C have not been published. Ascorbic

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

acid tablets can be bought in drug stores without prescription. Several grams of ascorbic acid can be given orally or parenterally daily without producing evidence of toxicity. Ascorbic acid is promptly absorbed from the gastrointestinal tract, and any amount in excess of bodily need is rapidly excreted in the urine. If there is a lower incidence of respiratory tract infections in such areas as Florida, it is unlikely that this is attributable to the availability of citrus fruits in these areas. Although severe ascorbic acid deficiency (scurvy) in animals or man leads to heightened susceptibility to infections and, conversely, the presence of infection may increase the requirement for ascorbic acid, there is no conclusive evidence that the administration of excessive quantities of ascorbic acid enhances resistance to infectious agents.

GILLES DE LA TOURETTE'S DISEASE

To the Editor:—*The reply to the question under the above heading in* The Journal (**151:**962 [*March 14*] *1953) repeats the myth that Tourette's disease is identical with or similar to latah, "Jumping," and miryachit. There can be no doubt that Tourette's disease is, in itself, a neurological entity, but latah, "Jumping," and miryachit are local variations of a fundamental psychiatric anomaly that are best, in view of existing confusion, called simply the latah reaction. In a paper in the* Journal of Mental Science (**98:**515 [*Oct.*] *1952) entitled "The Latah Reaction: Its Pathodynamics and Nosological Position," I gave reasons for the above view and also pointed out that the latah reaction is essentially a fright neurosis, with minimal hysterical features, found in persons whose power of adaptation and mastery are limited by a low standard of civilization.*

P. M. Yap, M.B.
Medical Officer in Charge, Mental Hospital
Hong Kong

CARE OF INFANT OF A DIABETIC MOTHER

To the Editor:—*In Queries and Minor Notes, May 2, 1953, is a question on care of the infant of a diabetic mother. The answer advocates oral administration to the infant of 10 cc. of 5% dextrose in water immediately after birth and then every one or two hours during the first few days, in addition to the regular feedings. It is suggested further that 5% dextrose in sodium chloride solution be injected in each buttock if the dextrose is not taken by mouth.*

This answer stems from the period prior to recognition of the fact that neonatal hypoglycemia is physiological during the first few days of life in infants of both diabetic and nondiabetic mothers. Despite the low blood sugar levels, newborn infants do not have symptoms of hypoglycemia, such as occur in older children and adults. Causes other than hypoglycemia, such as atelectasis and cerebral hemorrhage, have been discovered as responsible for the attacks of cyanosis that often occur in newborn infants of diabetic mothers. Cyanosis in these infants responds more readily to the use of suction and administration of oxygen and carbon dioxide than to administration of glucose, even intravenously. It has been found that routine administration of glucose by mouth does not affect the infant's blood sugar level appreciably. Regardless of weight and size, the infant of a diabetic mother behaves like a premature baby. It is usually edematous. It should not receive regular feedings, as mentioned in the answer; these should be withheld until the edema and respiratory difficulty, if present, are abated, which may take as long as six days. Some physicians advocate very small intramuscular doses of mercurial diuretics (0.1 cc.) to hasten the correction of the edema.

Leon M. Levitt, M.D.
14 E. 16th St., Brooklyn 26.

To the Editor:—*In* The Journal, *May 2, 1953, page 105, is a question about the care of a newborn infant of a severely diabetic mother. The answer given needs amplification. The question indicated an interest in the use of intravenously administered glucose solutions. Actually, this is seldom needed, because few, if any, of these infants have hypoglycemia that requires correction in the neonatal hours. The primary cause of death is pulmonary atelectasis secondary to hyaline membrane formation. Other causes are congenital heart defects and perhaps chemical and hormonal factors that are not well understood.*

Treatment of the infant involves first the use of gentle aspiration of the mouth, nose, and pharynx and perhaps the passing of a catheter into and aspiration of the stomach shortly after delivery, especially if the baby has been born by cesarean section. My routine procedure, following aspiration in the delivery room, consists of placing the infant, regardless of weight or maturity, in a humidified, oxygenated incubator, where it is left undisturbed, except for further aspiration, if needed. Nurses are asked to observe the color and respiration carefully and to watch for convulsive movements during the first 24 hours of life. Blood glucose determinations are not made routinely, for the normal newborn infant of a nondiabetic mother may have a blood glucose level of 50 mg. per 100 cc. or less. Furthermore, there is presumably in the newborn infant the same endogenous release of glycogen for the regulation of blood glucose as exists in the older infant.

In only one of the last 30 infants of diabetic mothers observed by me or my associates did hypoglycemia cause difficulty, and in that infant there was an associated congenital cerebral defect. Loss of weight during the first few days is greater than in other newborn infants, but this is due to overhydration of the infant before birth and, usually, does not necessitate either oral or parenteral fluid replacement. Even with this weight loss, clinical evidence of hypoglycemia is rarely noted. Careful observation of the infant is needed, for signs of respiratory embarrassment may not commence for 6 to 24 hours after delivery. The use of penicillin and possibly streptomycin soon after birth merits consideration as a prophylactic measure against secondary pulmonary infections. Lastly, the mother's dose of insulin should be reduced during the 24 hours preceding delivery, and two or three small doses of regular (quick-acting) insulin should be given instead of the customary single dose of one of the slow-acting insulins. Administration of a glucose infusion to the mother during delivery is also advised in the case of a severely diabetic woman.

Alfred E. Fischer, M.D.
73 E. 90th St., New York.

RECURRENCES OF RHEUMATIC FEVER

To the Editor:—*The question in Queries and Minor Notes in* The Journal, *July 11, 1953, concerning the prevention of recurrences of rheumatic fever is answered in a manner that, we believe, has improper emphasis. The reply disregards, in essence, the statements of the American Heart Association Council on Rheumatic Fever and Congenital Heart Disease* (J. A. M. A. **151:***141* [*Jan. 10*] *1953). While the precise pathogenesis of acute rheumatic fever is still unknown, there is little question that most attacks follow pharyngeal infections with group A hemolytic streptococci. That recurrences can be prevented by the prevention of streptococcic infections has been shown in many studies. It has also been demonstrated that the proper treatment of streptococcic sore throats with penicillin results in a markedly decreased incidence of both recurrent and primary attacks of clinical rheumatic fever. Since about one-half of such streptococcic infections, for various reasons, do not receive the attention of a physician, it would appear necessary for chemoprophylaxis to be given continuously the year around if one were to succeed in preventing recurrences of rheumatic fever. In our present state of knowledge, there appears to be little question that such a program is proper if not mandatory. There may be some question about the ideal method for providing the penicillin, but the best of present information supports the doses recommended in the publication referred to above. Such factors as housing, crowding, altitude, weather, diet, etc., are probably of importance to the pathogenesis of rheumatic fever only as they are related to the epidemiology of streptococcic disease.*

Harry A. Feldman, M.D.
Harold B. Houser, M.D., Syracuse, N. Y.